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THE UNIVERSTY OF ALBERTA

The Relationship Between Intrinsic Motivation And Ability In Competitive Swimming

By

Mark Stephen Nesti

©

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF Master of Arts

DEPARTMENT OF PHYSICAL EDUCATION AND SPORT STUDIES

EDMONTON, ALBERTA

SPRING, 1989

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To: Faculty of Graduate Studies
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February 21st 1989.

Re: Thesis: M.A.
MARK NESTI

This is to indicate that the Questionnaires used in the above students M.A. Thesis are in fact the same or modifications in part of an ongoing study which I'm conducting.
Permission & updating materials have been forwarded by Rainer Martens & Deci & Ryan this year & in my telephone conversations it was made clear that either myself or my students would be continuing with this work. Original permission was granted in 1982 & should be on file with you.

However, if there is a problem please let me know & I will get permission again, for Martens, Deci & Ryans, Harter's questionnaires (Rotter & Rosenberg are researching in the Leavens I believe!) However, these questionnaires were all adapted by myself for the original 1982 research.

Many thanks.

Jan. M. Hoyg
Associate Professor.

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FACULTY OF GRADUATE STUDIES AND RESEARCH

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ABSTRACT

The main purpose of this study was to examine the relationship between intrinsic motivation and ability in organized competitive swimming. The psychological variables of specific self-esteem, and competitive trait anxiety were also examined because of their strong conceptual relationship to several definitions of intrinsic motivation. Deci and Ryan's (1985a) and Csikszentmihalyi's (1975) conceptualizations of intrinsic motivation provided the theoretical base of this study.

Several self-report inventories were administered to measure intrinsic motivation, specific self-esteem, and competitive trait anxiety in male and female competitive swimmers (N=219). Three ability groups for competitive swimmers were identified: nationally ranked 1-25 for at least one event (N=51); nationally ranked 26-50 for at least one event (N=42); unranked swimmers (N=126).

Two way analyses of variance (GENDER x ABILITY) were conducted to determine whether there were significant differences between swimmers on the psychological measures. Tests revealed that for the variable of perceived competence, ranked swimmers scored higher than unranked swimmers, these differences being significant ($p<.05$). Considering the competitive anxiety trait measure, females scored higher than males, and swimmers ranked nationally 1-25 scored lower than swimmers ranked 26-50, both differences being significant ($p<.05$).

Investigation of the correlations between measures revealed that a fairly strong negative relationship existed between competitive trait anxiety and intrinsic motivation, and a strong positive relationship was evident between perceived competence and intrinsic motivation measures.

The general finding emanating from this study was that all swimmers scored highly on intrinsic motivation, and that top ranked swimmers' scores exceeded those of lower ranked and unranked swimmers.

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I. STATEMENT OF THE PROBLEM

A. Introduction

No other psychological variable has been studied as extensively as motivation (Garvie, 1979). This reflects the extreme complexity of the subject area, and its perceived importance. However, most researchers would agree that much work still remains to be done not the least of which, would be to persuade much of the psychological community that motivation can be studied scientifically.

In contrast, the layperson has few problems with the term motivation. They know what it feels like - it exists phenomenologically for them, and they assume that others experience the same. The non-scientist, and most sport coaches would state that where behaviour is concerned, "the more motivation the better!" The scientific method has failed to provide such an unequivocal finding, however, recent studies focusing on intrinsic motivation support the contentions of those who base their understanding of motivation on personal knowledge (Polanyi, 1958).

The problem for coaches in competitive sport, is that they are faced with a bewildering number of ways in which to enhance an athlete's motivation. Extrinsic motivators such as prizes, medals, social recognition, and threats, are thought to be effective in regulating athlete behaviour. Coaches have assumed that where an athlete is interested and intrinsically motivated toward a sport task, he will

experience enjoyment and be prepared to persist in his training and final performances. Research (Ryan, 1979; Wankel, 1985) has generally confirmed these two hypotheses, however, some of the more "unexpected" findings have largely been ignored by most coaches and sport program organizers.

A reliable finding emanating from mainstream psychology is that extrinsic motivation can have a negative effect on intrinsic motivation, and reduce overall motivation on a task (Deci, 1971). Although this finding has been replicated in sport research, the excessive use of extrinsic rewards in sport indicates that coaches and administrators are unaware of, or more likely, have ignored, these findings.

Within both professional and amateur sport the typical coach sees their function as that of an authoritarian leader, capable of motivating their charges to better performances. This approach emphasizes the use of reinforcements and a controlling psychology. In contrast, there is a small number of enlightened coaches who adopt a more humanistic approach, utilizing an authoritative leadership style (Chelladurai, 1984), and encourage self-regulation, and intrinsic motivation in athletes. These coaches are typically portrayed as being primarily interested in encouraging athlete enjoyment, fun, and life-long commitment to sport. However, competitive sports and most coaches still place considerable emphasis on performance and winning - enjoyment and interest are of secondary importance.

In conclusion, more coaches would focus on the intrinsic

motivation (ie: interest and enjoyment) of their athletes if this psychological variable could be associated with superior performance, as well as enjoyment. In this study, such a problem is addressed, by investigating the relationship between intrinsic motivation and achievement level in competitive swimming.

B. Some important definitions

Several conceptualizations and definitions of intrinsic motivation are reviewed in depth in chapter II, therefore intrinsic motivation will not be considered in this section.

Extrinsic Motivation

Carron (1984) stated that extrinsic motivation involves, participating in something "because of the external (tangible) rewards which have become associated with involvement in the activity or task" (p.97). Extrinsic motivation can be inferred from behaviours which appear to be carried out to obtain reinforcements such as, monetary rewards, prizes, verbal feedback, and avoidance of punishment. Athletes may be motivated to approach positive incentives, and avoid those perceived as negative.

An extrinsically motivated individual focuses on rewards which are external to the task itself. In Garvie's (1979) terms, extrinsically motivated athletes are more interested in the product of performance, than in the process.

Finally, research (Deci, 1971; Lepper and Greene, 1975) has revealed that intrinsic motivation is undermined where

extrinsic rewards are perceived as controlling, or make an individual feel incompetent. In contrast, intrinsic motivation on and toward a task, may be enhanced where extrinsic rewards convey information to the recipient that he is competent.

Perceived Competence

This construct refers to how effective an individual feels in meeting the challenges of his environment. Harter (1979) viewed perceived competence as being correlated strongly with a person's intrinsic motivation to be effective. Further, she criticized global approaches to competency measures, and suggested that perceived competence should be differentiated into cognitive, social, and physical domains.

Perceived competence inreases when an individual is successful on a task, or receives positive feedback about performance. Negative feedback, and frequent failure on a task may weaken perceived competence. The implications of this for competitive sport are extremely unfavourable, given that coaches tend to use more negative than positive comments with athletes (Carron, 1984), and competition may furnish more losers than winners!

In conclusion, it is suggested that increases in perceived competence lead to increased intrinsic motivation only when the task is optimally challenging, and the individual feels self-determined (Deci and Ryan, 1985).

Locus of Causality.

It is generally agreed that the ultimate goal of science is to discover causes. The philosopher Hume argued that phenomenologically, causes seem to "exist", however, science has been unable to provide an empirical referent relating to cause (DeCharms, 1968). Locus of causation and self-determination seem to exist phenomenologically, and yet they remain inaccessible to precise empirical measurement.

Deci and Ryan (1985a) stated that locus of causality, "refers to the perceived source of initiation and regulation of behaviour" (p.166). In simple terms, it is concerned with whether an individual feels that behaviour is motivated by others, or by themself. It may be used to interpret situations such as, whether athletes train hard only to please coaches and parents, or because they really want to.

It is assumed that both personal and situational factors affect an individual's perception of events. Regarding personal factors, it has been suggested that an individual possesses a combination of three causality orientations, and behaviour reflects the strength of each of these orientations. A strong autonomy orientation is associated with a perceived internal locus of causality, and self-determined behaviour. Both control, and impersonal orientations are associated with a perceived external locus of causality, and non self-determined behaviour.

Locus of causality differs from locus of control as explained by Rotter (1966); with the former, focus is on why a person behaves in a particular way, and the accompanying

feelings and thoughts, however, with the latter, focus is on reinforcements and what controls a person's outcomes. Deci and Ryan (1985b) noted that some internal perceptions operate more like external controls. The thought, "I must do that to feel right", involves an internal locus of control according to Rotter (1966), however, it does not produce truly self-determined behaviour as ascribed to an internal locus of causality.

Anxiety

The literature often fails to distinguish between conceptualizations of stress and anxiety. Both concepts have been viewed as detrimental, involving the emotions, and capable of being measured physiologically. However, it may be more correct to define anxiety as a negative state which involves a disproportionate response to objectively non-threatening situations. In contrast, stress can be described as psychological and/or physiological arousal, which may be harmful if associated with excessive, or insufficient stimulation. Csikszentmihalyi (1975) suggested that where individuals' skills do not match task challenges, they will become either, over, or under stressed, and experience anxiety.

Spielberger (1966) stated that anxiety could be divided into trait and state anxiety. Trait anxiety refers to a personality disposition that predisposes a person to perceive many situations as threatening, and to respond with state anxiety. According to Spielberger, state anxiety is a

transitory emotional state that varies in intensity, and fluctuates over time. An individual with a high A-trait is expected to respond to threatening situations such as competition, with a high A-state.

To measure competitive A-trait in sport, Martens (1977) developed a sport specific instrument (SCAT). Although research using SCAT has failed to discover a reliable relationship between A-trait and an athlete's skill level, other studies have revealed that a strong relationship exists between trait anxiety level and enjoyment of competitive sport (Carron, 1984).

Regarding performance in competitive sport, Martens, Burton, Vealey, Bump, and Smith (1983), advocated the use of the Competitive State Anxiety Inventory (CSAI) which focuses on the conceptual distinction between cognitive, and somatic anxiety. This connects well with previous studies that support the arousal-inverted U hypothesis. Put simply, anxiety may lead to excessive physiological arousal, muscular tension, and other somatic complications resulting in poor performance. From a cognitive perspective, anxiety could lead to worry, fear of failure, self-evaluation thoughts and inattentiveness during the task, resulting in poor performance.

Self-Esteem

Self-esteem is an affective state that involves feelings of personal efficacy and self-worth. Hogg (1982) defined self-esteem as,

"a personal judgement of self-worthiness which is reflected in the attitudes and feelings that an individual holds toward himself" (p.9).

It can be viewed either as a global term, or in a domain specific sense. High global self-esteem does not necessarily imply that self-esteem is strong across all domains. With the athlete, domain specific measures may reveal high athletic self-esteem, and low levels of social, and cognitive self-esteem.

Self-esteem is cited as an important factor in sport performance (Hogg, 1982), therefore, successful athletes would at least be expected to possess high athletic self-esteem. Of course, this is a correlational relationship, and as such, can not provide causal explanation. Studies are needed to investigate the effect of high athletic self-esteem on sport performance, and the effect of successful sport performance on athletic self-esteem.

C. Justification for the study

Sport has been frequently described as an intrinsically motivated activity. This is because many consider that sport is chosen freely, is enjoyable, involves feelings of competency, and is pursued for its own sake. However, in professional sport and most "organized" competitive amateur sports, extrinsic motivation appears to be more important than intrinsic motivation. In the professional sport milieu,

where economic survival often depends on winning, an emphasis on extrinsic motivation is understandable. Amateur sport does not, or should not, revolve around such "over-powering" motivators as money and financial profit, therefore, intrinsically motivated aspects should be more salient.

Although research (Orlick and Mosher, 1978) has revealed that extrinsic rewards can undermine intrinsic motivation on a sport task, most organized amateur sport appears to be increasing its focus on extrinsic motivation as evidenced by the greater availability of medals, trophies, awards, and more pressure on winning. Studies on participation motives in youth sport, have identified that intrinsic motivation variables are the most important where young athletes are concerned. Unfortunately, it seems as though coaches, sport program organizers, and many parents are excessively concerned with providing extrinsic motivation in youth sport.

Extrinsic motivation is useful in enhancing short-term performance, however, many coaches and teachers are coming to realize that in the long term, self-motivation (ie: intrinsic motivation) is most important. Intrinsic motivation is favoured by more humanistically oriented coaches where the emphasis is on sport enjoyment. In an attempt to convince the more control oriented coaches of the importance of intrinsic motivation for both enjoyment and performance enhancement, this study will utilize the work of Gallwey (1974) and Csikszentmihalyi (1975). These researchers describe the intrinsically motivated state as involving a

complete absorption in the task, loss of ego, and no feelings of anxiety. There is considerable anecdotal evidence and empirical research (Csikszentmihalyi, 1975) which suggests that our best performances occur in this state of mind.

The layperson knows the truth in the expression, "the best workers are happy workers!"; the challenge is to provide empirical evidence that the best swimmers are those who are interested, self-determined, perceive themselves as competent, are less anxious, possess high self-esteem, and enjoy themselves.

Several reliable and valid self report inventories are used in this study, to measure psychological variables that relate directly to intrinsic motivation, and other variables that are associated closely.

D. The Hypotheses

The literature provided support for investigation of the following general hypotheses:

1. It was hypothesized that a significant relationship existed between competitive trait anxiety and a sport specific measure of intrinsic motivation in competitive swimmers.

2. It was hypothesized that a significant relationship existed between a measure of specific self-esteem and the variable of autonomy orientation measured by the locus of causality scale.

3. Further, it was hypothesized that a significant

relationship existed between a sport specific measure of intrinsic motivation and perceived competence in competitive swimming.

4. Finally, it was hypothesized that differences for the six dependent variables - competitive anxiety, specific self-esteem, intrinsic motivation, perceived competence, control orientation, and autonomy orientation existed as a function of achievement level and gender.

To investigate hypothesis #4 (above) the following null hypotheses were stated:

4i. No significant difference is expected between means of all swimmers in three ability groups for the six dependent variables.

4ii. No significant difference is expected between means of male and female swimmers for the six dependent variables.

II. REVIEW OF LITERATURE

A. Theories of Intrinsic Motivation

During the first half of the twentieth century, instincts and drives were considered as acceptable explanations of the "urges and forces in behaviour that gave it a purposive cast". (Cofer, 1972; p.17).

Freud (1962) conceptualized instincts as, the somatic demands upon mental life that cause all human activity. Proponents of Drive Theory (Hull, 1943; Dollard and Miller, 1950) stated that behaviour was motivated by a biological need; an organism would act to satiate tissue deficits external to the nervous system and restore homeostasis. White (1959) challenged both Drive and Instinct approaches to motivation. He observed that even when the basic primary needs of sex, and food are met, humans and other animals still seek novelty, exploration, and stimulation. The play behaviour of children is not explained adequately by either Drive or Instinct theories. White (1959) offers a more complete explanation of play, postulating that it is behaviour motivated by competence motivation,"continued not because it serves primary drives...but because it satisfies an intrinsic need to deal with the environment" (p.318).

In directing the focus away from childrens' "pure" play, White suggested that much adult behaviour is motivated by competence motivation. The organism is assumed to be

motivated toward interacting competently and effectively with its environment in order to appropriate "feelings of efficacy" (White, 1959; p.323). Competence motivation may be undifferentiated in the infant, however, during later experiences, it becomes differentiated into mastery and achievement behaviour. In conclusion, competence motivation is seen most unambiguously in infant play, and throughout an organism's life, "it regularly occupies the spare waking time between episodes of homeostatic crisis"(White, 1959; p.321).

DeCharms (1968) continues with the organismic approach to motivation advocated by White (1959) stressing that as well as being influenced by external stimuli, "human beings believe themselves to be causes and this belief affects their behaviour" (p.5).

This concept of human causality is central to metaphilosophical issues concerning whether behaviour is understood as being determined, or chosen freely. The Behaviourist views man as "object"; in that behaviour is believed to be determined exclusively by physical events, the concept of motivation is not required in a purely objective science of behaviour. However, from a phenomenological perspective that emphasizes the importance of personal knowledge (Polanyi, 1958) as a means to attaining a more complete understanding of human behaviour, DeCharms (1968) states that man is the causal agent of his behaviour.

An important facet of DeCharms' Personal Causation Theory is that it stresses the importance of perception, over

"objective facts". He refers to an "Origin" as one who perceives his behaviour to be self-determined; a "Pawn" perceives his behaviour as determined by forces outside his control. This dfstinction is best understood in terms of a continuum, an individual being capable of feeling more "origin-like" in one situation, and more akin to a pawn in another.

Perceiving oneself as the origin or locus of causality for behaviour has been likened to the intrinsic motivation state described by DeCharms. He stated that in the origin condition, tasks may be undertaken to demonstrate personal causation. This perception that, "you are the task", is accompanied by experiential states associated with intrinsically motivated behaviour, such as, lack of anxiety or pressure, minimal ego involvement, and a feeling of complete immersion of self in the task.

Deci (1975) draws on the work of White (1959) and DeCharms (1968) to explain his conceptualization of intrinsically motivated behaviours. He suggests that, "intrinsically motivated behaviours are behaviours which a person engages in to feel competent and self-determining" (p.61). They involve seeking out and attempting to overcome challenges.

Deci and Ryan (1985a) stressed that intrinsic motivation is innate. They concluded that people are born with a need to be effective, and that during our lives, this need is differentiated increasingly. The actual expression of this

innate need is different between people and throughout an individual's life span. As with other components of personality, the persistence and final form of the effectance need is dependent upon both an individual's inherited dispositions (ie: traits) and environmental "moulding". Throughout the last seventeen years (1971-88) Deci and his co-workers have addressed various issues surrounding the need to be effective.

After several studies (Deci, 1971; Lepper and Greene, 1975; Ross, 1975) Cognitive Evaluation Theory was proposed to account for the negative effects of external rewards on intrinsic motivation. The unexpected finding that extrinsic motivation (ie: external rewards) failed to produce an increase in overall motivation on an already interesting activity, was explained in terms of perceived competence, and self-determination. Borrowing heavily on DeCharms' (1968) work, Deci (1975) and Deci and Ryan (1985a) postulated that where an event interferes with the need to be self-determining, and an external perceived locus of causality occurs, intrinsic motivation toward an activity will be undermined. In simple terms, if you feel your behaviour is more directed by some person or thing rather than by yourself, then intrinsic motivation will be lowered.

The second proposition of Cognitive Evaluation Theory relates to the intrinsic need to be competent and master optimal challenges. Deci and Ryan (1985a) state that events "that diminish perceived competence will decrease intrinsic

motivation" (p.63). This could occur in an individual whose repeated failures on a task leads them to view themselves as totally incompetent.

In both competence and self-determination domains the important factor is an individual's perception of events, as opposed to their "objective" reality. It may be, for example, that an individual perceives themself as competent, after repeated failure on a task, because of the attributions they make concerning the reasons for their losses. The novice tennis player's frequent losses to the club professional may even enhance perceived competence and intrinsic motivation where they regularly win one game!

Finally, Deci and Ryan (1985a) noted that an individual's perception of external rewards will determine the direction and magnitude of their effect on intrinsic motivation toward an activity. Rewards can be perceived as informational, controlling, or amotivating. Where an external reward is perceived by an individual as giving positive feedback about current performance compared to past performances, the informational aspect will be most salient, thereby enhancing intrinsic motivation toward the task. However, where positive feedback is expressed in terms of how performance compares to "what it should be", it may be experienced as controlling, producing an external perceived locus of causality in the person, and subsequent decrease in intrinsic motivation. Lastly, amotivationally salient aspects of external rewards may be perceived by a person who

feels both non self-determined (ie: possesses an external perceived locus of causality), and lacking any intentionality in his behaviour. The behaviour of such an individual will be neither intrinsically, nor extrinsically motivated. This situation can be envisaged where a person's behaviour seems to lack urgency, and apparently, be little self-directed or other-directed. In sport for example, a performer may continue to participate even though they are no longer interested, and care little about the extrinsic rewards available. Such individuals may indeed be described as "merely going through the actions"; in the event that an activity to which they are truly motivated becomes available, they may "drop out" and pursue this new challenge.

In conclusion, Deci and Ryan (1985a) contend that it is misleading and unhelpful to define intrinsically motivated activities as, those engaged in because of rewards inherent in their own structure. They suggest that an activity is not its own reward - more properly, the reward is the feeling of competence and self-determination.

Extensive research (Csikszentmihalyi, 1975) has investigated the feelings and emotions associated with intrinsically motivated behaviour. Csikszentmihalyi has suggested that intrinsically motivated activities contain experiential rewards in themselves. Quite simply, enjoyment of an experience, and use of personal skills are considered as the most important aspects of intrinsically motivated behaviour. Csikszentmihalyi has identified the components of

enjoyment that are potentially available during the performance of an activity. Experiencing an enjoyable activity involves a merging of action and awareness, self-forgetfulness or loss of ego, a feeling of being in control, and perceiving self as competent. He referred to the concept of flow to describe the experience associated with enjoyable activities. Flow is, "the holistic sensation that people feel when they act with total involvement" (Csikszentmihalyi, 1975; p.36).

The most salient aspect of the flow state is the perception of control over the environment. Additionally, whether flow is or is not experienced, depends on an individual's perception of the task's challenge, and his personal competence. Although focusing on experiential aspects of intrinsic motivation, Csikszentmihalyi is in agreement with other researchers (White, 1959; DeCharms, 1968; Deci, 1975) by reiterating that the perceptions of self-determination, and competence, are all important.

Finally, researchers (Csikszentmihalyi and Getzels, 1973) have investigated the effects of extrinsic motivation on the flow experience. Extrinsic motivation of a controlling nature, such as ego involving competition which involves social comparison, will interfere with the quantity and quality of the flow experience.

In summarizing the literature presented so far, it can be stated that all researchers (White, DeCharms, Deci, Ryan, Csikszentmihalyi) have identified either, or both concepts,

of self-determination and perceived competence, as being central to intrinsically motivated behaviour. Their approach to intrinsic motivation refutes the idea that a person can be motivated by some unspecified, almost mystical properties, inherent in an activity. By stating clearly the nature of intrinsically motivated behaviour, they have provided a paradigm which has enabled empirical research to be conducted.

B. Intrinsic Motivation and Performance

It has been suggested that intrinsic motivation toward a task, and experiential aspects associated with intrinsically motivated behaviour, would lead to a better performance, than where behaviour was more extrinsically motivated (Deci and Ryan, 1985a).

Kruglanski, Friedman and Zeevi (1971) found that qualitative aspects of task performance were improved where extrinsic incentives were almost absent. They suggested that task performance improved under low incentive (ie: low extrinsically motivating) conditions, because subjects could more likely attribute causality for task performance to their self. In conclusion, Kruglanski et al. stated that excessive extrinsic motivation may distract an individual, and divert attention away from the task itself to the anticipated rewards. Performance deterioration could also occur if the pressure of extrinsic incentives caused emotional interference, increased anxiety, and over arousal.

However, the mere presence of extrinsic motivation in the form of rewards and incentives is not sufficient evidence that they "caused" the decrement in task performance. Inagaki (1980) investigated the effects of offering a controlling type of extrinsic motivation in the form of external reinforcement for performing a task. Utilizing behavioural and self-report measures, he found that quality of performance, and intrinsic motivation toward the task declined, however, the quantitative aspects of the work were improved. It appears that extrinsic incentives which are perceived as controlling may cause a "trade off" between quantity and quality of performance. For simple, less creative types of tasks, and in the short term, an emphasis on quantitative aspects of performance may be acceptable. However, given that qualitative aspects are usually as salient as quantitative, and long term personal investment in an activity is desirable, then greater effort should be directed toward enhancing motivation intrinsically, as opposed to extrinsically through controlling incentives.

Supporting Deci and Ryan's (1985a) work, Koestner, Ryan, Bernieri, and Holt (1984) stressed the need to focus on individuals' perceptions of constraints, and the meaning these constraints and rewards have for them. They studied young childrens' performances in a painting activity, which was regulated by setting performance limits and standards. They found that where children perceived the limits to be controlling, their creativity and quality of artistic

production declined in comparison to conditions where limits were perceived as informational.

The research reported here has been conducted in laboratory settings and restricted to the study of performance on one specific task. In a more ecologically valid study, Whitehead (1984) asked sixth formers (ie: Grade 12 students) to complete a questionnaire that measured intrinsic and extrinsic dimensions of motivation. The results revealed that academic high achievers scored significantly higher on the intrinsic motivation dimension, in comparison to students of lower academic attainment. Although this was essentially a correlational study as opposed to a causal analysis, it does suggest that successful students are those who enjoy their work, find it interesting, challenging, and non-threatening.

Further, Whitehead found that intrinsic motivation in high achievers was not related to social class, or parental attitudes, however, extrinsic motivation was closely related to a parent's attitude toward status, recognition and money. A possible interpretation of these findings is that although significant others (ie: coaches, parents, teachers) have a powerful influence on the importance we attach to extrinsic rewards, intrinsic motivation is more dependent on individual factors such as perceived competence, interest, and enjoyment.

In summarizing the research on intrinsic motivation and performance it can be suggested that the concepts of

perceived competence, and locus of causality are of most importance. In stressing the distinction between informational and controlling types of extrinsic motivation, researchers are dealing with the issue of locus of causality, or self-determination. Controlling extrinsic motivation produces an external perceived locus of causality in an individual, and undermines intrinsic motivation. In contrast, extrinsic motivation which is understood as giving information about performance, tends not to interfere with the perception of feeling self-determined in one's behaviour.

Whitehead's research suggested that a positive relationship existed between perceived competence and actual competence (ie: academic achievement). However, this research did not allow for causal inferences to be made about the relationship of competence to perceived competence. A further weakness was that academic competence was viewed in a global fashion.

Harter (1982) developed the Perceived Competence Scale for Children that measured individuals across cognitive, social, and physical domains. In addition, Harter included a fourth scale which assesses the child's general self-esteem. This measure allows for comparisons to be made between each of the perceived competence scores and the child's general self-esteem. The considerable intra-subject and inter-subject differences in subscale scores for each domain suggested that, "instruments which yield a single score are masking important distinctions which children can make about

their competence in different domains" (Harter, 1982; p.95).

A second aspect of this research investigated the strength, although not the direction, of the relationship between teacher ratings of actual competence, as measured by achievement test scores, and perceived competence. The correlation between perceived and actual competence was stronger across all four domains as a function of increasing age. Of particular interest here, Harter reported that pupils who played for school sport teams scored significantly higher ($p < .001$) in perceived physical competence than their classmates. In addition, the largest positive correlation for the four subscales was between perceived physical, and perceived social competence scores.

Lastly, childrens' perceived competence was strongly related to their intrinsic motivation orientation to prefer challenge, and engage in task mastery attempts.

While considerable research (Harter, 1981; Vallerand and Reid, 1984) has focused on perceived competence, there have been comparitively few studies addressing the issue of locus of causality. However, Deci and Ryan (1985b) conducted an extensive piece of research, culminating in the design of an instrument for measuring a person's causality orientations. They have conceptualized causality orientations as, "relatively enduring aspects of people that characterize the source of initiation and regulation and thus the degree of self-determination of their behaviour" (p.109).

In focusing on the person and not the task, Deci and

Ryan's work rests on the premise that different people respond differently to the same events. Individuals are hypothesized to possess three causality orientations; the strength of a particular orientation at any one time depends on both personal characteristics, and the nature of the task. An autonomy orientation relates to an internal perceived locus of causality; a control orientation occurs where an individual perceives an external locus of causality; an impersonal orientation is where no attributions of causality are made by an individual.

As predicted by Deci and Ryan, a significant ($p.<.001$) correlation was found between self-esteem scores and autonomy orientation. In addition, a strong significant ($p.<.001$) correlation existed between the impersonal orientation and external locus of control scores as measured by Rotter's (1966) locus of control scale. Finally, utilizing a large mixed sample ($N=636$), female undergraduates rated significantly ($p.<.001$) higher than males on the autonomy orientation.

The autonomy orientation is related to an internal perceived locus of causality (ie: self-determination), therefore, an individual scoring high on autonomy, and lower on the control, and impersonal orientations, could be described as being more intrinsically motivated in their behaviour. As such, the General Causality Orientations Scale is a powerful instrument for use in research concerned with self-determination aspects of intrinsic motivation.

The conceptualization of intrinsic motivation that focuses on feelings of competence and self-determination, provides an entry point for researchers interested in the psychology of leisure, and sport. Researchers (Neulinger, 1974; Haworth and Smith, 1975) have distinguished between leisure and work, in that the former is chosen freely, and involves an individual's perception of "free", self-determined behaviour. They recommend that focus should be on experiential aspects of leisure activities such as, perceptions, peak experiences, and feelings of pleasure. Neulinger (1974) refers to leisure as, "an activity done for its own sake" (p.17). However, he also advocated that rewards inherent to leisure activities are real and measureable; in this sense, he views intrinsically motivated behaviour as being motivated by some "thing", as opposed to nothing.

In the sport literature, Halliwell (1978) makes a similar claim to those researchers who define leisure activities as intrinsically motivated. He suggests that, "sports activities are intrinsically motivated in themselves" (p.71), and involve feelings of perceived competence, and self-determination. Halliwell concludes that if sport is engaged in primarily because it is an enjoyable pursuit capable of providing feelings of competence and self-determination, any situation, or event, which threatens these perceptions and experiences should be investigated.

C. Sport and Intrinsic Motivation

Research on the undermining of intrinsic motivation toward and within sport activities has been prominent in sport motivation studies during the last decade. Much of the research investigating the effects of extrinsic rewards on intrinsic motivation has explained this subtractive relationship in terms of perceived competence, and locus of causality.

Orlick and Mosher (1978) reported that extrinsic rewards may increase performance in the short-term, even though they undermine intrinsic motivation on the task. In addition, they noted that a non-reward group displayed the highest intrinsic motivation on a task. This result was interpreted in terms of locus of causality - the non-reward group were less likely to attribute their behaviour to external causes, and Cognitive Evaluation Theory (Deci, 1975) predicts that an external locus of causality undermines intrinsic motivation.

In a more ecologically valid study, Ryan (1979) noted that male college footballers who were receiving scholarships, exhibited less intrinsic motivation than athletes not on scholarships. He suggested that these rewards (ie: scholarships) were perceived as controlling by the recipients, which may have led to an external perceived locus of causality, and decrease in intrinsic motivation. However, further analysis revealed that female athletes receiving scholarships were more intrinsically motivated than female athletes not on scholarships. This has been

interpreted according to Cognitive Evaluation Theory, in that the focus is on the meaning an extrinsic reward has for an individual, and not merely its presence. Ryan postulated that because scholarships in women's athletics were a fairly new development and offered to only very few, the effect could have been to confer positive information to athletes about their ability, rather than being perceived as controlling and interfering with feelings of self-determination.

A problem facing competitive sport is that it usually involves evaluation against others, rather than assessing competence against individual reference norms. An excessive focus on winning and pressure from coaches and peers, may result in an external perceived locus of causality, and undermining of intrinsic motivation.

A study by Weinberg and Ragan (1979) assessed male subjects' intrinsic motivation for performance on a pursuit rotor task, in either a competitive, or a non-competitive environment. They found, that subjects who experienced the competitive condition were more willing to return to the task. The correct interpretation of this result, is not, that competition enhances intrinsic motivation for the task, but, that direct competition is motivating - extrinsically so.

Addressing the relationship between perceived competence and intrinsic motivation, Vallerand and Reid (1984) revealed that male subjects' perceived competence on a stabilometer

task had a causal relationship with their level of intrinsic motivation toward the task. However, positive feedback on performance did not enhance intrinsic motivation where the subject perceived himself to be incompetent. It appears that informing an athlete that he has performed well had less effect on intrinsic motivation, than where his own perceptions conveyed competence.

Although not concerned primarily with the concepts of intrinsic motivation and extrinsic motivation, the work of Roberts (1984) focuses on the role of perceived ability in sport motivation. In a strict sense, the concept of ability refers to the innate performance capacity of an individual. Performance, and hence the level of competence achieved, is not merely the expression of ability, but depends on the individual's skill level, physical conditioning, and a host of other variables. However, Roberts uses the term ability in much the same way that Deci (1975) employs the word, competence. Further, Roberts (1984) advocates that the perception of ability is the central construct in sport motivation. In agreement with previous theory (White 1959, Deci 1975), he states that, "children who perceive themselves as able should be more motivated than children who perceive themselves as unable" (p.225).

Roberts offers that different achievement goals give rise to different perceptions of what may be regarded as success, or failure. Three achievement goals have been suggested (Maehr and Nicholls, 1980) - an ability

demonstration goal; a task involved goal; a social approval goal. Within a sport context, these three goals are referred to as competitive ability achievement goals, sport mastery, and social approval goals.

With competitive ability goals, the focus is on social comparison processes. This may result in extrinsically motivated behaviour, in that an athlete is motivated solely by the reward of winning. This achievement goal is fraught with problems. For athletes who want to demonstrate competitive ability but often lose; due to a real or perceived lack of talent, the answer may be to "drop out" and avoid failure.

Maehr and Nicholls (1980) explain ability-orientated motivation by referring to the propositions of Attribution Theory. They suggest that an ability-orientated individual, typically strives to maximize attributions of high ability and minimize attributions of low ability to the self. In contrast, Maehr and Nicholls stress that task-orientated motivation, where the focus is on, "doing something for its own sake", may be the most important aspect of motivation in outstanding adult achievement. Task-orientated motivation or mastery behaviour is intrinsically satisfying, and it is argued, may be a universal form of achievement motivation. They have also reported gender differences in achievement motivation. They stated that in competitive environments and achievement situations, females tend to be more ability-orientated and social approval orientated than males.

With a sport mastery achievement goal, focus is on, "being able to perform as well as possible regardless of outcome" (Roberts, 1984; p.220). Behaviour is therefore more intrinsically motivated, with the athlete being more task involved, less ego involved, and more interested in perfecting a skill, rather than comparing performance to others. In the competitive sport environment, athletes possessing strong sport mastery goals will focus more on the process of performance, instead of the product. Coaches should encourage athletes to make ability assessments based on their own previous performances, and not outcomes or results.

In conclusion, an athlete usually possesses three achievement goals which underly their perception of ability, and competence. Where an individual performs mainly to gain social approval, or to demonstrate competitive ability, they will be extrinsically motivated. In contrast, those athletes possessing stronger sport mastery goals will be more intrinsically motivated. In this condition, youth sport drop out may be alleviated, and athletes will persist and possibly enhance performance in the knowledge that, they are the measure of themselves.

D. Youth Sport and Intrinsic Motivation

In this next section, research that focuses on intrinsic motivation and youth sport is reviewed. This has consistently been the foremost area of applied research in

intrinsic motivation and sport. Within this area, most work has addressed the issues of, participation motives in youth sport, and the high incidence of "drop-out" from youth sport programs.

Alderman and Wood (1976) stressed the need to investigate incentive motivation in sport. They suggested that to understand athletes' behaviour, it is necessary to know which outcomes and rewards they are seeking. An analysis of incentive motivation in young Canadian hockey players revealed that the most important incentive systems were affiliation, excellence, and arousal incentives. While affiliation incentive is a type of extrinsic motivation, being good at something for its own sake (ie: excellence), and incentives which revolve around opportunities for excitement, encountering novelty, and challenge (ie: arousal), are intrinsic motivations. Although Alderman and Wood focused on the construct of achievement motivation to interpret their research, it is possible to view their work as highlighting the importance of intrinsic motivation in youth sport.

At least for young athletes, participation motives are more intrinsic than extrinsic. However, Singer and Gerson (1980) question whether competitive sport with its emphasis on winning and social evaluation, is capable of providing athletes with sufficient opportunity to become intrinsically motivated. Youngsters may enter and participate in sport primarily for intrinsic reasons, but, sport in its current

state, might be failing to provide access to intrinsic incentive systems.

In order to meet the psychological needs of young athletes, effort should be directed at re-establishing the play ethic in youth sport, and encouraging more informally organized competition (Watson, 1984). The experience of fun and enjoyment has been identified as being of major importance in youth sports. It has been suggested that failure to experience these elements has led many young athletes to withdraw from sport (Gould, Feltz, Horn, and Weiss, 1982).

In an attempt to discover the underlying factors affecting enjoyment, Wankel and Kreisel (1982) developed the Minor Sport Enjoyment Inventory. After administering the questionnaire to 839 youth sport participants, they found that the most enjoyed experiences were improving skills, and personal accomplishment - extrinsic rewards such as receiving prizes, and winning the game were much less important. These findings provide additional support for the importance of intrinsic motivation (Deci and Ryan, 1985a) and sport mastery (Roberts, 1984) in youth sport.

When considering intensely competitive youth sport, some researchers (Passer, 1982; Scanlan and Lewthwaite, 1984; Roberts, 1986) have focused on the interaction between participation motives and anxiety. The high incidence of "drop-out" from competitive youth sport programs could be due to unrealistic performance expectancies, and excessive focus

on social comparisons, which result in high competitive anxiety. Competitive sport tends to induce anxiety in participants due to the public nature of performances, and because it involves a zero-sum relationship, where winning by one person always results in defeat for the other. Deci and Ryan (1985a) suggest that athletes often become ego-involved in competition and feel that their self-esteem "hinges" on winning. Obviously, athletes who react to competition in this way, and perceive themselves to be incompetent, will experience intense anxiety. Further, athletes who participate in directly competitive (ie: "face to face") individual sports, and possess high competitive trait anxiety levels, will suffer most. For these individuals the option is either to remain in an unenjoyable, threatening situation, or to withdraw from competitive sport.

Passer's (1982) succinct statement "nicely" sums up the importance of this research. He asks,

"would losing a game or having low success expectancies before a game, for example, be most anxiety-inducing for those players involved in sports primarily because of success-related motives?" (p.241).

To this question, Roberts (1986) would answer in the affirmative, while recommending that enjoyment could be enhanced, and anxiety reduced, where attention was directed more at performance goals than outcome goals.

Gill, Gross, and Huddleston (1983) found that boys placed more emphasis than did girls on status and achievement

motives. Although skill development (ie: competence seeking) was the most important participation motive for both sexes, Gill et al. found that extrinsic motivation variables were rated of greater importance by boys. A factor analysis of the data revealed that female athletes scored higher than males, on most of the items relating to intrinsic motivation. In conclusion, Gill et al. advocated that studies should address differences in participation motives as a function of age, culture, sport type and gender.

Findings from participation motivation research is of interest to educators, sport scientists, and coaches. However, Gould and Horn (1984) have warned that although intrinsic motivation variables appear to be most important across a number of sports, large individual differences in motivation also exist. At a practical level, they suggest that coaches must discover which participation motives are motivating an individual, and structure the environment to cater to these needs. This is not sufficient however, because to enhance enjoyment, perceived competence, and performance, the coach should encourage athletes to alter their focus away from inappropriate extrinsic motives to intrinsic variables.

To facilitate the accumulation and analysis of youth sport motivation data, Weiss, Bredemeir, and Shewchuk (1985) developed an instrument to measure intrinsic motivation. This research was successful in that it confirmed what had previously only been conjectured - that intrinsic motivation

variables in sport could be operationally differentiated from extrinsic variables, and measured accurately.

A recent study (Scanlan and Lewthwaite, 1986) investigated a specific hypothesis which emanated from a consideration of much of the research reported here. In agreement with Deci (1975) Harter (1981) and others, they suggested that individuals' possessing higher perceived competence, experienced more enjoyment and fun in sport than individuals' of lower perceived ability. Their research with youth wrestlers revealed that skill related factors, whether mastery based, or social comparison orientated, were central to sport enjoyment.

This final study contends that individuals can enjoy sport equally, whether extrinsically motivated, or intrinsically motivated, provided they perceive themselves as competent. Although agreeing with this position, several researchers (Carron, 1984; Fox and Biddle, 1988) have suggested that in competitive sport where extrinsic rewards are only available to a limited number of athletes (ie: winners), a more healthy approach would direct attention toward intrinsic incentives available to all.

E. Summary

The research focusing on conceptualizations of intrinsic motivation can be summarized by the following:

1. Humans are motivated by an innate need to feel competent (White, 1959), and to experience themselves as causes of

their own behaviour (DeCharms, 1968).

2. When a person does something in order to feel competent and self-determining, their behaviour is described as intrinsically motivated (Deci, 1975).

3. Where extrinsic rewards of a controlling nature are offered for performance on an interesting task they will undermine intrinsic motivation on the task (Deci, 1971; Lepper and Greene, 1975).

4. "Pure" intrinsic motivation is experienced in the state of flow (Csikszentmihalyi, 1975) - this can only occur where an individual's skills match the challenge.

Research addressing sport, athletics, and intrinsic motivation can be summarized as follows:

1. Sports activities tend to be chosen freely, are interesting, and enjoyable; in addition, they provide feelings of competence and self-determination, and as such, are intrinsically motivated behaviours (Halliwell, 1978).

2. Where athletes view themselves as the cause of their own behaviour (ie: an internal perceived locus of causality) they will be more intrinsically motivated (Orlick and Mosher, 1978).

3. Athletes who perceive themselves as competent will experience increased enjoyment, persist longer, and be more intrinsically motivated than athletes who view themselves as incompetent (Vallerand and Reid, 1984).

4. Perceived competence (Deci, 1975) or perceived ability (Roberts, 1984) can be measured by social comparisons (ie: extrinsic motivation), or against self (ie: intrinsic motivation).

5. Intrinsic motivation variables such as experiencing fun, enjoyment, and perceiving self-competency, are the most important participation motives in youth sport (Gould and Horn, 1984; Wankel and Kreisel, 1982; Gill, Gross, and Huddleston, 1983).

6. Excessive focus on extrinsic motivation in competitive sport may lead to, high anxiety, negative feelings, and an undermining of intrinsic motivation, and athlete "drop-out". (Passer, 1982; Scanlan and Lewthwaite, 1984).

7. The relative importance to an athlete of intrinsic motivation changes across ages, gender, and type of sport (Wankel and Kreisel, 1982; Gill et al. 1983).

8. Female athletes tend to be more intrinsically motivated than male athletes (Ryan, 1979; Gill et al. 1983), however, in organized competitive sport females may be more extrinsically motivated (Maehr and Nicholls, 1980).

III. METHODS AND PROCEDURES

A. Introduction

This study measured the intrinsic motivation, self-esteem and competitive A-trait of competitive club swimmers, by employing five different self-report instruments. These questionnaires and the demographic information recorded on each response form provided the data to test the five main hypotheses investigated in this research.

B. Subjects

A sufficiently large sample (N=219) of competitive swimmers was accessed to enable meaningful comparisons to be made across ability and between sexes. Three groups of different ability levels were used to categorize swimmers into groups, or cells, of sufficient size to enable the appropriate statistical analyses to be conducted. The high ability group was made up of swimmers who were ranked nationally in the top 25 for at least one event in their age group. The second level consisted of those swimmers who were ranked between 26-50, and the third level was for non-ranked competitive swimmers.

The term, ability level, was used in this study because it is generally used in competitive swimming to refer to the rank and achievement level of a swimmer. However, in discussing the results, the more appropriate and

psychologically meaningful term of "achievement level" was used frequently.

C. Procedures

This study forms part of an on-going research project (initiated by Hogg, 1982) focusing on the psychological variables involved in competitive swimming. The Governing Body of the Sport (Swimming/Natation Canada) has given its approval, and supported this research.

In most cases the researcher personally supervised the collection of data. Where this was not possible, clear intructions were provided for the coach, to ensure that test conditions were met and procedures were administered consistently. (Appendix 3 & 4).

The tests were completed in relatively quiet, comfortable, and non-threatening environments where subjects could concentrate, and consider their responses seriously. Subjects were encouraged to go with their initial response, and not to take too long on the questionnaires. Further, if individuals experienced problems in comprehension of items, they were encouraged to approach the coach or researcher for clarification.

D. Instruments

Several well established inventories were utilized to measure the psychological variables of interest in this study. Some of the inventories were modified to address

specific elements, while others focused on global aspects.

A test battery (Appendix 1) was compiled carefully to minimize any bias. Questionnaire #1 measured global self-esteem; questionnaire #2 measured sport competition anxiety trait; #3 and #4 measured general and specific self-concept using the semantic differential measure; #5 measured specific self-esteem of competitive swimmers; #6 measured the intrinsic motivation of competitive swimmers; #7A and 7B measured perceived swimming competence; #8 measured general locus of control; and #9 was a measure of general causality orientations.

For the purposes of this study, only those questionnaires (ie: #2, #5, #6, #7A/B, #9) most pertinent to intrinsic motivation were considered.

A pilot test was conducted with male and female competitive swimmers of differing ages and ability. This was essentially a procedural review in that focus was on the time required to complete the test, instructional problems, and difficulties with comprehension of questions.

The Intrinsic Motivation Inventory (I.M.I)

The I.M.I is a multidimensional measurement device designed by Ryan (1982) to measure intrinsic motivation on an experimental task. Items within the questionnaire relate to the following dimensions of intrinsic motivation: interest - enjoyment; perceived competence; effort; value - usefulness; felt pressure - tension; and perceived choice.

The I.M.I possesses two notable advantages compared to

other measures of intrinsic motivation. Firstly, Ryan has stated that items within each dimension subscale overlap considerably, therefore shorter versions of the I.M.I are still reliable. Secondly, the scale is extremely maleable. Research (Ryan, 1982; McAuley, Duncan and Tammen, 1983) has revealed that items can be adapted to relate to specific tasks without adversely effecting reliability. However, Ryan (1982) has recommended the use of multiple items over single item surveys to enhance external validity.

McAuley, Duncan and Tammen (1983) constructed an 18 question version of the I.M.I scale to measure intrinsic motivation on and toward a basketball task. The scale's reported reliability in measuring the construct of intrinsic motivation was .851.

In this study, a 16 question version of the I.M.I was devised specifically to measure 4 factors (perceived competence; interest - enjoyment; tension - pressure; effort) as they relate to competitive swimming. Items were scored on a Likert scale from strongly disagree (1) to strongly agree (7).

The General Causality Orientations Scale

Deci and Ryan's (1985b) General Causality Orientations scale measures the control, autonomy, and impersonal orientations of an individual. The scale's development rests on the assumption that a person is a combination of these three orientations, and that the strength of each can be measured.

The scale consists of 12 vignettes, each containing three responses which relate to either autonomy, control, or impersonal orientations. Total scores for each orientation are calculated by summing the Likert scale values for the 12 responses on that subscale.

In assessing the internal consistency of the scale, Deci and Ryan tested 636 subjects. The reliability of each subscale was as follows: autonomy orientation .744; control orientation .711; impersonal orientation .741. The scale was also shown to possess temporal stability by testing subjects (N=51) over a two month interval. The test - retest reliability for the autonomy subscale was .749, control measured .711, and impersonal rated as .778.

The strong construct validity of the causality orientations scale can be derived from its high correlation with measures of self-esteem, social anxiety, and other constructs which are related theoretically. Indeed, Deci and Ryan have reported that in a study (N=70) utilizing a dependable measure of self esteem (Janis and Field, 1959), autonomy scores correlated positively ($p<.001$) with high self-esteem, and impersonal scores correlated negatively ($p<.001$) with low self-esteem. This supports Self-Determination (Causality) Theory which suggests that autonomy orientation is based on a strong positive sense of self, and an impersonal orientation is "founded" on a negative sense on self.

The scale includes items describing various domains of

activity, therefore, it is hypothesized to predict behavioural outcomes across domains.

The Perceived Competence Scale for Children

Harter's (1979) scale is based largely on White's (1959) concept of effectance motivation. Perceived competence is viewed as an important correlate and mediator of a child's intrinsic motivation to be effective.

The scale consists of 28 items that measure perceived competence in three domains. In addition, the original scale contained a general measure of childrens' self-esteem, although this has not proved to be reliable (Harter 1979).

Items on the questionnaire relate to cognitive, physical, and social domains, which reflects Harter's contention that children view themselves as more competent in some areas than in others.

The format of the scale has lessened the susceptibility to socially desirable responding. In contrast to questionnaires utilizing a true/false response procedure, the perceived competence scale legitimizes either response by implying that half of all people find one answer acceptable, while half would select the other answer. Each item is scored from low perceived competence (1) to high perceived competence (4).

In this study the perceived physical competence subscale (reliability .83) was used, because it refers primarily to perceived athletic skill and being good at sport. It was adapted specifically for use with competitive swimmers.

Measure of Self-Esteem

Rosenberg's (1965) Self-Worth Scale is a global measure of self-esteem that is reliable, valid, quick to complete, and particularly suitable for adolescents (Hogg, 1982). It consists of 10 questions; scoring ranges from 10 for low self-esteem, to 40 which represents high self-esteem. The scale has a reported high item scalability (.73) and test - retest reliability (.93).

Rosenberg (1979) advocated that specific self-esteem measures should be used where possible, because specific "self-attitudes" are more likely to predict specific behaviours. Therefore, this study utilized Hogg's (1982) adapted version of the Self-Worth Scale that provided a measure of "competitive swimming" self-esteem.

Measure of Competitive Anxiety

Competitive anxiety is to be measured by administering Marten's (1977) Sport Competition Anxiety Test (SCAT) to all subjects. Research (Martens and Simon, 1976) suggests that SCAT possesses internal consistency, reliability, and internal and external validity. As such, it provides a useful instrument for measuring competitive A-trait.

SCAT contains fifteen items, five of which are spurious questions included to reduce biased responses. Scores on SCAT range from 30 (high competitive A-trait) to 10 (low competitive A-trait). This instrument is appealing because it generally takes only five minutes to complete, and provides a more accurate and useful measure of competitive

anxiety than physiological measures (Martens, 1977).

E. Statistical Analyses

Prior to any statistical analysis, an alpha level of .05 was set.

Descriptive statistics were used to examine means, variances, and correlations relating to the various variables. Further, two-way analyses of variance were undertaken to discern if there were differences within variables as a function of level of ability, and gender.

F. Limitations

1. Self-report questionnaires were used to obtain information in this study - accuracy and validity is constrained by the recognized problems associated with self-report data, such as, dishonest responses, misinterpretation of items, and socially desirable responding.
2. Inventories were administered both before and after practice sessions.

G. Delimitations

1. The sample consisted of young competitive swimmers, hence it would be inappropriate to generalize the results to other athletes, sports, and non-competitive participants.
2. Swimming performance measures were limited to ranking only. Coaches viewed the response sheets in order to confirm

their swimmers ranking - in addition, further checks were made by using the most recently published list of the top 50 swimmers in each event.

3. The psychological variables were measured by several well established general instruments, and others that were adapted specifically.

4. As this study was mainly of a correlational nature, any discussion of causality rests merely on conjecture, albeit supported by reasoned argument, and not upon statistical evidence.

IV. RESULTS

A. Introduction.

A total of 219 competitive swimmers took part in this study. All individuals were between the ages of 12 and 23, and were members of various competitive swimming clubs (Table 1).

Descriptive statistics relating to the six dependent variables were computed for all swimmers according to ability (Table 2), and for male and female swimmers separately, according to ability (Appendix 5).

The group means presented in Table 2 revealed that for specific self-esteem, intrinsic motivation, and perceived competence measures, nationally ranked swimmers scored higher than unranked swimmers. A closer inspection of the mean differences between males and females, revealed that unranked females possessed the lowest mean scores on these three dependent variables (Appendix 5).

In order to determine whether any of the mean differences were significant as a function of ability and/or gender, it was necessary to conduct univariate analyses of the data. Two-way analyses of variance were conducted on the six dependent variables. Where significance was achieved, post hoc tests (Scheffe's Multiple Comparisons) were employed to determine the actual nature of the differences.

B. Analyses of Variance

Table 1

Demographic Data

Total Competitive Swimmers (N=219)					
Males (N=106)			Females (N=113)		
Nation. ranked 1-25	Nation. ranked 26-50	Unranked	Nation. ranked 1-25	Nation. ranked 26-50	Unranked
(N=28)	(N=20)	(N=58)	(N=23)	(N=22)	(N=68)

Age of Swimmers

Ages.	18 & over	17	16	15	14	13 & under
Males.	(N=24)	(N=7)	(N=18)	(N=17)	(N=15)	(N=25)
Females.	(N=11)	(N=8)	(N=17)	(N=11)	(N=24)	(N=42)

Table 2 Descriptive Statistics For All Swimmers According to Ability.

Ability levels	Nationally Ranked 1-25	Nationally Ranked 26-50	Unranked
Competitive Anxiety.	X=21.76 SD= 3.30 N=51	23.81 3.65 42	22.51 4.44 126
Specific Self-esteem.	X=31.18 SD= 4.47	31.31 4.86	29.63 4.80
Intrinsic Motivation.	X=84.90 SD= 8.41	86.36 8.26	83.46 9.18
Perceived Competence.	X=18.90 SD= 2.64	18.38 2.85	17.09 3.10
Locus of Causality-Control	X=54.02 SD= 5.49	53.43 6.97	55.06 7.25
Locus of Causality-Autonomy	X=68.67 SD= 6.85	66.86 9.65	67.47 9.02

X= mean SD= standard deviation (+-)

Analyses of variance were used to investigate the following null hypotheses:

4i. No significant difference is expected between means of all swimmers in three ability groups for the six dependent variables.

4ii. No significant difference is expected between means of male and female swimmers for the six dependent variables.

A two-way analysis of variance revealed a significant difference ($F=4.03$, $p<.05$) between males and females for competitive trait anxiety (Table 3). Inspection of the means (Appendix 5), revealed that females were more anxious than males. Although not quite achieving significance, there was indication of an important difference ($F=3.02$, $p<.051$) between swimmers as a function of ability. Post hoc analysis revealed that this strong trend toward significance, was based on a difference between swimmers ranked nationally 1-25 and those ranked 26-50 ($F=2.88$, $p<.058$) (Table 5).

Females scored lower on perceived competence than males, this difference being significant ($F=5.35$, $p<.05$)(Table 4). Further, the two-way analysis of variance revealed significant differences ($F=7.65$, $p<.05$) as a function of ability. Post hoc analyses utilizing the Scheffe Multiple Comparisons test, revealed that groups 1 and 3 were significantly different from each other ($F=6.44$, $p<.05$), and groups 2 and 3 were significantly different from each other ($F=3.03$, $p<.05$) (Table 6). Nationally ranked swimmers (ie:groups 1 and 2) scored higher than unranked competitive

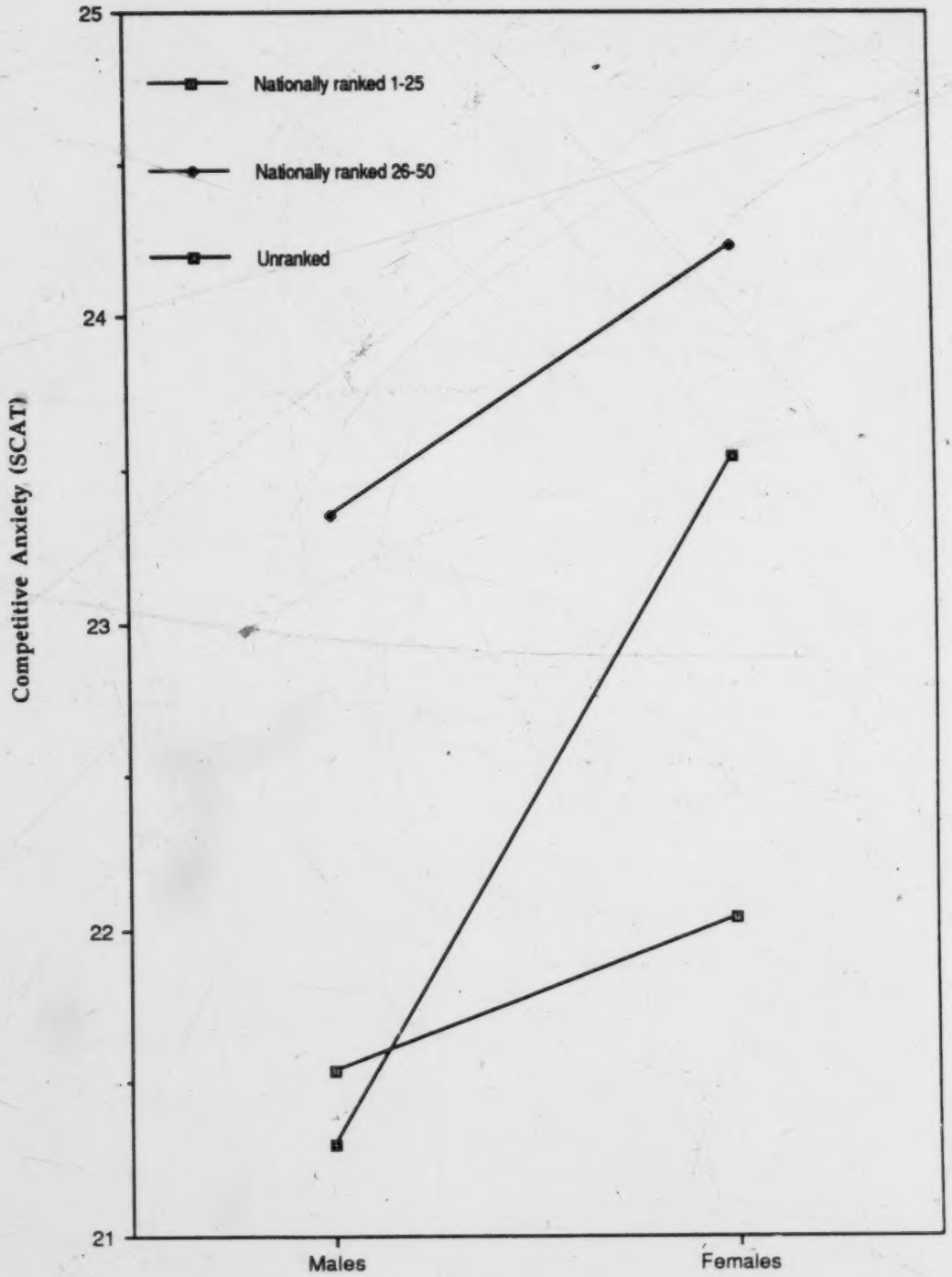


Figure 1: Group Means for the Variable Competitive Anxiety

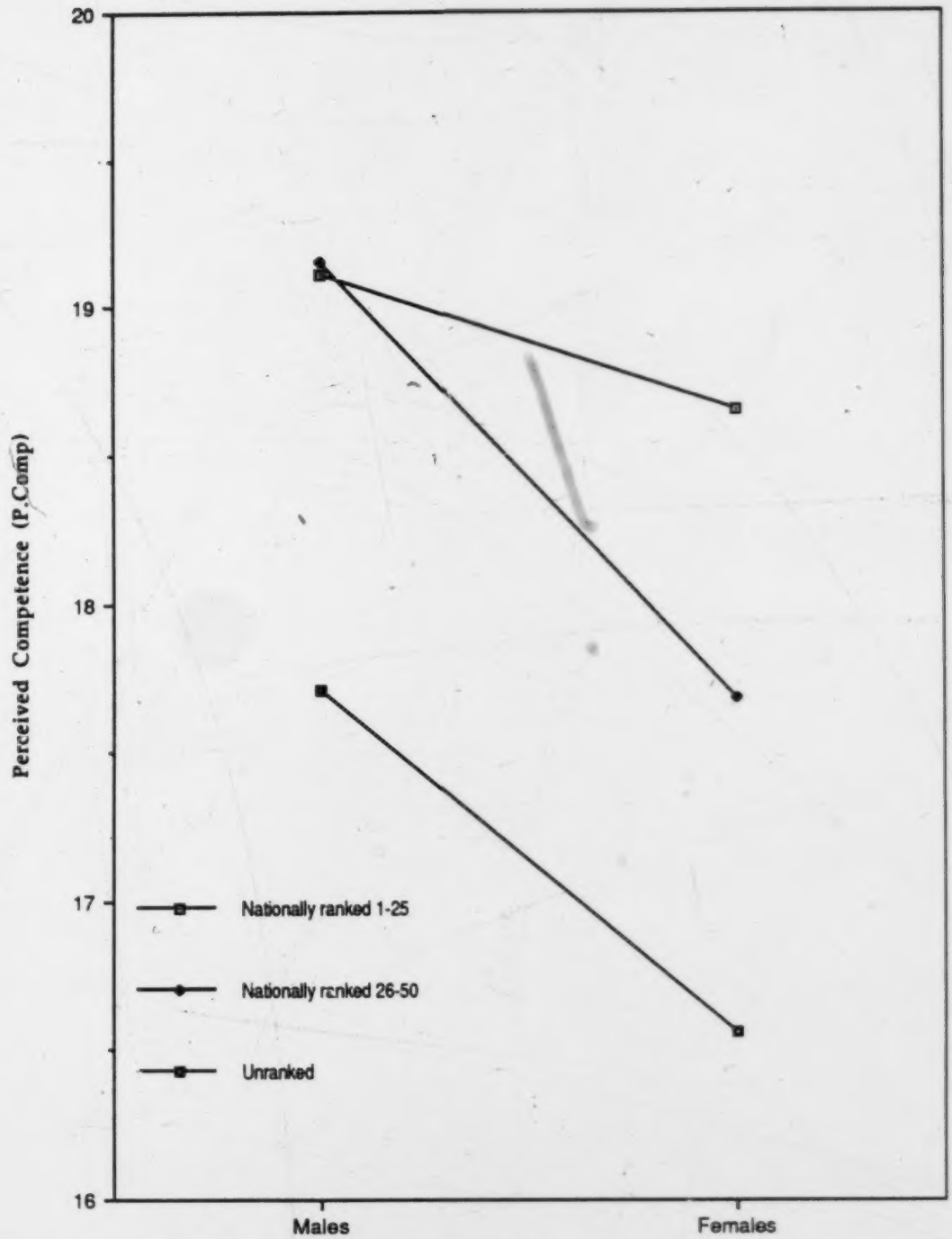


Figure 2: Group Means for the Variable Perceived Competence

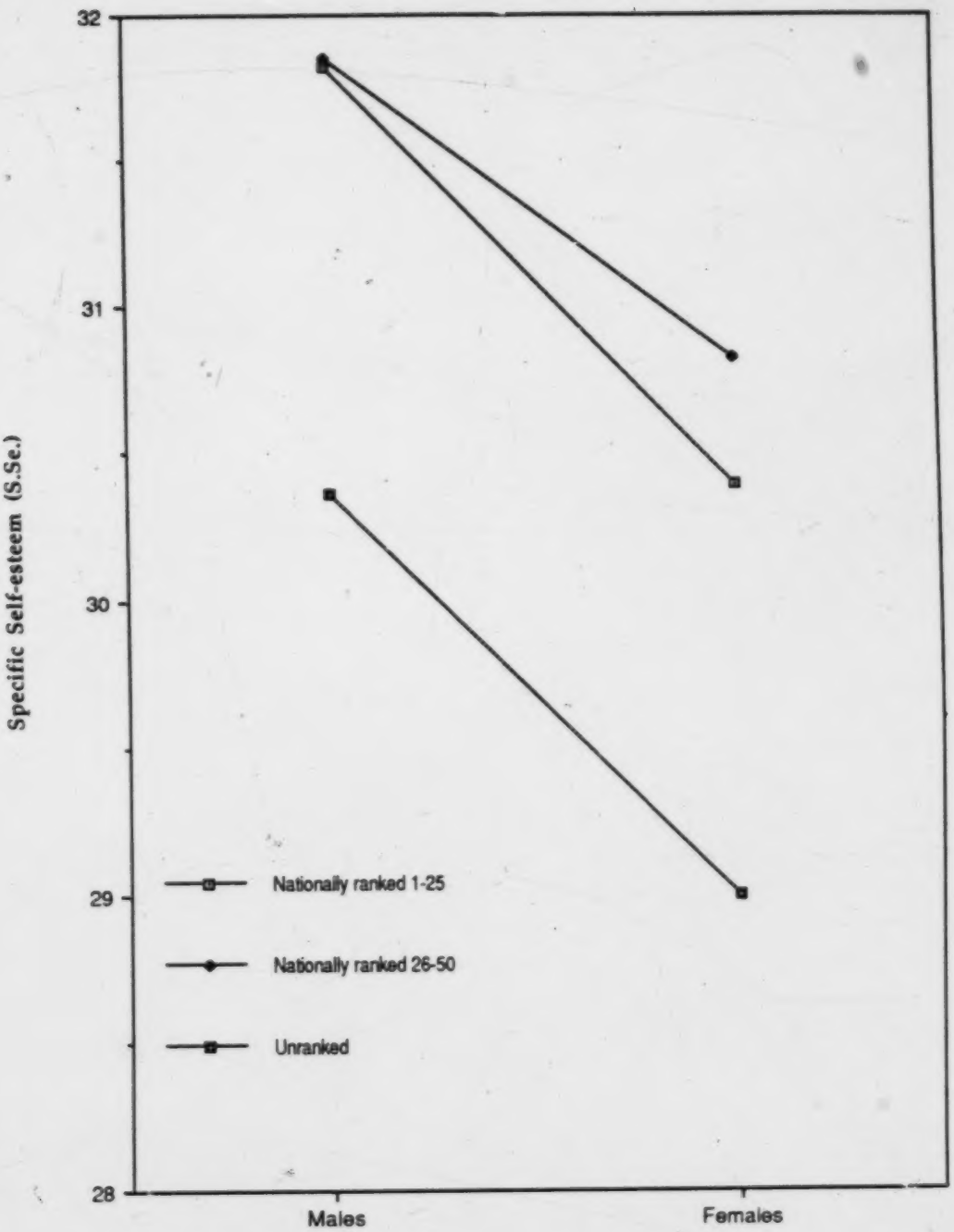


Figure 3: Group Means for the Variable Specific Self-esteem

Table 3 Two Way Analysis of Variance For Competitive Anxiety Scores (SCAT) of Male and Female Swimmers at Three Ability Levels.

Source of Variation.	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	64.00	4.03	0.046*
Ability	2	47.91	3.02	0.051
2-Way Interaction	2	16.87	1.06	0.347
Error	213	15.87		
Total	218	16.40		

*Significant at 0.05 level

Table 4 Two Way Analysis of Variance for Perceived Competence Scores of Male and Female Swimmers at Three Ability Levels.

Source of Variation.	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	45.64	5.35	0.022*
Ability	2	65.22	7.65	0.001*
2-Way Interaction	2	3.28	0.38	0.681
Error	213	8.53		
Total	218	9.17		

*Significant at 0.05 level

Post Hoc Analysis of Significant ANOVA's

Table 5 Scheffe's Multiple Comparisons of Main Effects (Ability) for Competitive Anxiety Mean Scores

Groups		F.Ratio	Prob.
1	2	2.88	0.058
1	3	0.45	0.639
2	3	1.86	0.159

Table 6 Scheffe's Multiple Comparisons of Main Effects (Ability) for Perceived Competence Means Scores

Groups		F.Ratio	Prob.
1	2	0.29	0.749
1	3	6.44	0.002*
2	3	3.03	0.050*

*Significant at 0.05 level

Group 1 = Swimmers Ranked Nationally 1-25

Group 2 = Swimmers Ranked Nationally 26-50

Group 3 = Unranked Competitive Swimmers.

swimmers on the perceived competence measure(Table 2).

Variance, as determined by Bartlett's test, was found to be homogeneous for competitive trait anxiety, and perceived competence measures.

Two-way analyses of variance were conducted on the remaining four dependent variables (specific self-esteem; intrinsic motivation; locus of causality-control; locus of causality-autonomy). These are reported in Appendix 6 and 7. Whilst no significant differences were found as a result of these analyses, main effects for the variable specific self-esteem displayed a trend toward significance. Considering gender, males scored higher on specific self-esteem than females (Appendix 5), however, the difference was not significant ($F=3.18$, $p<.076$). Again, although not significant ($F=2.82$, $p<.062$) an important difference existed between swimmers as a function of ability. Nationally ranked swimmers scored higher in specific self-esteem than unranked swimmers (Table 2).
This study primarily focused on the factors of ability and gender. However, data had also been catergorized according to the age of swimmers. To investigate whether results were influenced by the factor of age, exploratory one-way analyses of variance were conducted on the dependent variables. Considering scores on autonomy, one-way analysis of variance revealed a significant difference ($F=9.72$, $p<.05$) existed as a function of age (Appendix 8). However, no significant differences as a function of age were found for the remaining

five dependent variables.

C. Correlations.

Pearson correlation coefficients between the six dependent variables were calculated. Four of the correlations ($r<.4$) proved to be significant at the 0.05 level (Table 7).

Regarding hypothesis #1 stated in this study, analysis revealed that as expected, there was a fairly strong and significant negative correlation ($r=-0.46$) between competitive trait anxiety (SCAT) and intrinsic motivation (I.M.I). However, closer inspection revealed that this relationship was stronger when considering unranked swimmers (Table 10) compared to ranked swimmers (Tables 8 & 9). Finally, further investigation revealed that unranked males evidenced the strongest significant negative correlation (Appendix 9 II). A strongly significant positive correlation was found for males who were ranked nationally (26-50) (Appendix 9 II).

No support was found for hypothesis #2, which stated that specific self-esteem (S.SE.) and the autonomy orientation of locus of causality (Autonomy) would be related.

In contrast, there was considerable support for hypothesis #3, which stated that a sports specific measure of intrinsic motivation would be related to perceived competence in competitive swimming (Table 7). When considering all

Table 7 Correlation Matrix of the Dependent Variables (N=219).

	SCAT	S.S.E	IMI	P.Comp.	Control	Autonomy
SCAT.		-0.22	-0.46*	-0.33	-0.03	-0.01
S.S.E.			0.64*	0.56*	-0.03	0.14
IMI.				0.52*	-0.03	0.14
P.Comp.					-0.06	0.07
Control.						0.16

* Significant at 0.05 level

Table 8 Correlation Matrix of the Dependent Variables for Swimmers Ranked 1-25 (N=51).

	SCAT	S.S.E	IMI	P.Comp.	Control	Autonomy
SCAT.		-0.18	-0.29	-0.32	0.01	0.08
S.S.E.			0.55*	0.45*	0.11	0.08
IMI.				0.46*	0.11	0.29
P.Comp.					-0.04	0.15
Control						0.24

* Significant at 0.05 level

Table 9 Correlation Matrix of the Dependent Variables for Swimmers Ranked 26-50 (N=42).

	SCAT	S.S.E	IMI	P.Comp.	Control	Autonomy
SCAT.		0.25	-0.36	-0.54*	-0.30	-0.18
S.S.E.			0.78*	0.33	-0.21	0.11
IMI				0.44*	-0.01	0.02
P.Comp.					0.20	0.13
Control.						0.28

* Significant at 0.05 level

Table 10 Correlation Matrix of the Dependent Variables for Unranked Swimmers (N=126).

	SCAT	S.S.E	IMI	P.Comp.	Control	Autonomy
SCAT.		-0.24	-0.56*	-0.30	0.03	0.04
S.S.E.			0.61*	0.64*	0.01	0.17
IMI.				0.55*	-0.06	0.14
P.Comp.					-0.10	0.03
Control						0.10

* Significant at 0.05 level

subjects (N=219) I.M.I and Perceived Competence measures were related significantly (r=0.52). However, no noticeable trend or large differences were found when comparing different ability levels, and males and females.

Although not relating directly to the hypotheses, several other interesting significant correlations were revealed. Indeed, the strongest significant relationship identified in this study was between Specific Self-Esteem (S.SE.) and I.M.I measures (Table 7, Appendix 9I).

When considering all subjects (N=219) Specific Self-Esteem (S.SE.) significantly correlated with Perceived Competence (r=0.56) (Table 7). This correlation was stronger for unranked swimmers than nationally ranked swimmers (Tables 8,9 & 10). The strongest significant relationship was for unranked female swimmers (Appendix 9 I)

Finally, mention should be made of three significant correlations that relate indirectly to hypothesis #2.

Appendix 10 identified that the I.M.I measure was significantly related with Autonomy for nationally ranked (1-25) male swimmers. Further, the Perceived Competence measure was significantly related to Autonomy for both groups of nationally ranked male swimmers, (Appendix 10).

Whereas hypothesis #2 predicted a relationship between Specific Self-Esteem (S.SE.) and Autonomy measures and none occurred, a significant correlation was found, between Specific Self-Esteem (S.SE.) and Control for nationally ranked (1-25) female swimmers (Appendix 9 I).

V. DISCUSSION

The finding that competitive trait anxiety was negatively correlated with intrinsic motivation can be explained by reference to Csikszentmihalyi's (1975) account of intrinsically motivated behaviour. He described the intrinsically motivated individual as feeling competent, being absorbed in the task, experiencing enjoyment, and consequently, having less anxiety. Although this correlational analysis can not be used to provide evidence of causality, it is interesting to note that anxiety tends to interfere with enjoyment of competitive sport (Scanlan and Lewthwaite, 1984). A closer examination of the data suggested that high competitive trait anxiety has a more detrimental effect on intrinsic motivation for unranked swimmers, than it does for ranked swimmers. A possible interpretation of this finding is that some unranked competitive swimmers may be "caught" in a situation where they are anxious about their ability and level of performance, which may lead to less enjoyment, increased cognitive and somatic tension (Martens et al. 1983) and poorer performance.

Deci and Ryan (1985b) reported that self-esteem was positively related to autonomy scores on the General Causality Orientations Scale. Such a relationship was not found in this study. This may have been due to problems encountered in trying to correlate a sport specific measure

of self-esteem with a general measure of locus of causality. Indeed, Deci and Ryan (1985) conclude that, "behaviour is multi-determined and the general scale lacks sufficient specificity to capture much variance" (p. 131).

The relatively strong support found for hypothesis #3 suggested that following Harter's (1981) work, swimmers who perceive themselves as competent at competitive swimming tend to be more intrinsically motivated. This finding receives considerable support from the theoretical accounts of intrinsic motivation, upon which this study is based. Deci and Ryan (1985a) define intrinsic motivation in terms of perceived competence (and self-determination), therefore, it is probably not too surprising to find that a measure (I.M.I) that focuses on the feelings of enjoyment and interest associated with intrinsically motivated behaviour should correlate strongly with perceived competence. Although, in this study it is impossible to discern exactly how perceived competence interacts with feelings of enjoyment and interest, coaches and teachers should be made aware that perceiving self-competency seems to form an important part of the whole concept of intrinsic motivation.

Specific self-esteem related very strongly to intrinsic motivation as measured by I.M.I. Developed by Ryan (1982), the I.M.I has not been extensively used in sport settings. However, McAuley et al. (1983) successfully tested its appropriateness in an experimental sport environment. The study reported here provided further support for the use of

the I.M.I in sport research. More specifically, the finding that specific self-esteem and intrinsic motivation were strongly correlated could be interpreted according to research (Ryan and Grolnick, 1984) which suggested that where individuals of differing ability and achievement levels possess equally high self-esteem, they must necessarily be more intrinsically motivated than extrinsically motivated. This can be understood in the context of competitive sport, where athletes who "hinge" their self-esteem on extrinsic rewards such as winning and favourable social comparison, will suffer reduced self-esteem when these rewards are denied.

Specific self-esteem correlated strongly with perceived competence, with this relationship being more pronounced in unranked swimmers compared to ranked swimmers. A possible interpretation of this is that unranked swimmers may have a stronger tendency to base their self-esteem as swimmers on how competent they see themselves in competitive swimming. It should be remembered that some unranked swimmers are very successful when competing against their peers. Unfortunately, they may still possess low self-esteem, because they compare themselves unfavourably against the ranked swimmers in their own age group and event. Ofcourse the strength of a correlation says nothing about its magnitude. Indeed, the results revealed that ranked swimmers as a group possessed the highest scores on self-esteem, and perceived competence.

Nationally ranked (1-25) male swimmers displayed the strongest correlations for I.M.I with Autonomy, and for Perceived Competence with Autonomy. That these two correlations involve the three measures of intrinsic motivation used in this study, lends support to previous research (Whitehead, 1984) which found that high achievers were more intrinsically motivated than individuals' at lower levels of achievement.

In contrast to the highly ranked male swimmers, nationally ranked (1-25) female's self-esteem about themselves as competitive swimmers was significantly related to a measure of control causality orientation. This orientation relates to non self-determined aspects of behaviour, and may be used to assess the strength of an individual's extrinsic motivation. Although Gill et al. (1983) stated that boys tend to be more extrinsically motivated than girls, Maehr and Nicholls (1980) observed that in a highly competitive environment and where the stress is on high achievement, females tend to be more ability-orientated and social approval orientated (ie: extrinsically motivated) than task-orientated (ie: intrinsically motivated). Further research (Deci, Betley, Kahle, Abrams and Porac (1981) has revealed a similar interaction between competition and gender of the subject.

A study by Hogg (1982) with competitive swimmers (N=705) revealed, that males scored higher on specific self-esteem than females, across ability levels and age groups. It seems

that females find competition in sport more threatening to self-esteem than do males, and as Deci and Ryan (1985a) conclude, "competition seems to undermine the intrinsic motivation of females more than of males" (p.328).

In support of previous research findings (Hogg, 1982; Martens et al. 1983) this study identified female competitive swimmers as being significantly more anxious than male swimmers. Martens has suggested that females tend to respond with greater anxiety in competitive situations because they are less self-confident and are afraid of losing due to the negative social comparisons that accompany this condition. This finding connects well with intrinsic motivation theory. Both Csikszentmihalyi and Deci state that where individuals' are absorbed in the task and perform more for rewards inherent to the task, their anxiety will be less, compared to individuals, such as female competitive swimmers, who are more extrinsically motivated.

The most important finding of this study, and one that relates closely to intrinsic motivation theory, was that higher ranked swimmers perceived themselves as most competent in competitive swimming. Feeling competent is an important part of intrinsic motivation according to White, (1959) and Deci and Ryan (1985a), therefore, this finding strongly suggests that higher achievement level swimmers are more intrinsically motivated than lower achievement level swimmers.

Further, gender differences revealed that males scored

higher on a perceived competence measure than did females. Again, this supports the suggestion made earlier, that in organized competitive amateur sports, males may be more intrinsically motivated than females. A different interpretation of these gender differences is possible, in that females as a group may simply be more "conservative" in their responses, consequently scoring less than males. In reality, males and females could be little different in terms of the strength of their specific self-esteem, and perceived competence.

Finally, some exploratory analysis determined that autonomy scores differed significantly as a function of age. The General Causality Scale, which contains the autonomy subscale has been used with clinical populations (Strauss and Ryan, 1987) and with students over the age of 16 (Deci and Ryan, 1985b). A large part of this inventory may be difficult to comprehend and not very meaningful to young competitive swimmers, in that many of the questions refer to work or parenting situations. Therefore, it was somewhat understandable to discover age differences. It may have been that the younger competitive swimmers frequently selected responses from the middle of the 7 point Likert scale, while the older subjects were more sure of their answers, and responded at the extremes.

VI. CONCLUSIONS

Several of the findings in this study provided support for research cited in the review of literature that stressed the importance of intrinsic motivation in youth sport. Comparitively few studies have investigated intrinsic motivation in elite level athletes, which in part may reflect an erroneous belief that only "non-serious" recreational participants are truly intrinsically motivated. However, this study revealed that not only are elite performers intrinsically motivated, but that they are more intrinsically motivated than low achievement level performers, at least in terms of perceiving self-competency.

Perceived Competence has received a considerable amount of attention in participation motivation research. In a recent study, Klint and Weiss (1987) reported that youth gymnasts who were high in perceived competence were more motivated by skill development reasons, or sport mastery goals (Nicholls, 1984). These results replicated several of Harter's (1979, 1982,) earlier findings. However, in a broader theoretical context, all of these previous studies as well as this particular investigation, support Deci and Ryan (1985a) and Csikszentmihalyi's (1975) account of intrinsic motivation. More specifically, the various component measures of intrinsic motivation related quite strongly with one another, and tended to be negatively correlated with anxiety. This relationship between anxiety and intrinsic

motivation supports Csikszentmihalyi's conceptualization of intrinsically motivated behaviour as involving, among other elements, perceiving self-competency on challenging tasks, and experiencing little anxiety.

That the highest ranked swimmers tended to rate themselves as less anxious and feeling more competent in competitive swimming, can be interpreted in either of two ways. Quite simply, these swimmers may have always viewed themselves as competent, less anxious, and possessing strong self-esteem in competitive swimming. Alternatively, their high ranking may have strengthened their intrinsic motivation, and self-esteem, while reducing feelings of anxiety.

A difficulty with this study was that Martens' (1977) competitive anxiety inventory relates to trait anxiety. The actual level of anxiety immediately preceding, and during a performance, is most important in terms of preventing the experience of flow (Csikszentmihalyi, 1975). Unfortunately state anxiety could not be measured in this study. Therefore, although competitive trait anxiety may be defined as a relatively stable enduring personality disposition, an A-trait measure was used to identify those individuals, who are likely to respond to threatening situations with high state anxiety.

This present study cannot explicate the interaction between behaviour and cognitions due to its design as a correlational investigation. However, although it is

difficult to state with any certainty that intrinsic motivation (ie: cognitions) precedes elite swimming performance (ie: behaviour), it is appropriate to conclude that being intrinsically motivated is important to most amateur athletes, and may be vital to remaining at the top level. While recognizing that there are exceptions to every rule, the importance of being intrinsically motivated in elite level competitive sport can be fully understood in Deci and Ryan's (1985a) succinct statement. They stated that, "truly intrinsically motivated activity may produce the experience of flow, the total, non self-conscious involvement with the activity that yields the fullest experience and most refined performance" (p. 333).

Another important approach to intrinsic motivation in sport has focused on enjoyment. Scanlan and Lewthwaite (1986), attempted to conceptualize the components of sport enjoyment. Although focusing on participation motives and youth sport "drop-out", their research is pertinent to this study in that they have connected achievement in competitive sport to intrinsic and extrinsic motivation. An interesting distinction is made between enjoyment that is related to perceptions of competence based on task goals and skill development, and perceptions of competence based on social comparisons. The former is referred to as achievement-intrinsic motivation, while the latter is described as achievement-extrinsic motivation. Regarding this study, perceived competence was, following Harter, Deci,

and White, defined as an important component of intrinsic motivation. Nevertheless, as Scanlan and Lewthwaite suggest, perceived competence may also be related to extrinsic motivation.

This potential problem with interpretation of the measure of perceived competence used in this study can be readily understood by the following. Question 3 on the scale (adaptation of Harter, 1979) states, "some swimmers do not perform well at important swim meets" (p.88), - the swimmer may choose a response that reflects how they perceive themselves (ie: intrinsic motivation) or how they feel significant others perceive their competency (ie: extrinsic motivation).

In general, the findings of this study were constrained by the limitations associated with gathering data by questionnaires. Again, approximately thirty percent of the questionnaires were administered by the coaches - this represents another potential source of measurement error. However, the most important problem with the method of measurement used in this study, is that it restricts interpretation of the data to a quantitive analysis. This is a particularly debilitating fault where the researcher needs to know "how and why", as opposed to merely "how much".

In that this study has identified that measures of intrinsic motivation, specific self-esteem, and competitive trait anxiety differ across achievement levels, and between gender, additional research should be conducted to determine

more exactly how the competitive swimmer experiences these psychological variables. The use of self-report inventories is fully justified where the intention is to discover the existence of a specific variable of human motivation across a large sample.

However, having reached this stage a human science approach to psychology (Giorgi, 1970) could be adopted which suggests that the most reliable and valid method for discovering individuals' cognitions and attitudes is simply to ask them!

Although there were differences between ability levels on several measures, possibly more could have been discovered if different ability groupings had been used. Comparing swimmers ranked nationally in the top 10 to those ranked between 40-50, and unranked competitive swimmers, may have revealed greater between group differences. Indeed, there is a general belief in competitive sports that individuals who are "at the top" are there largely because of their psychological make up, and not so much because of any exceptional physical attributes.

Being more intrinsically motivated may help competitive swimmers to perform better, as has been explained in this study by reference to Csikszentmihalyi's concept of flow. Further, elite level athletes are constantly under intense pressure to perform well and maintain their high standing, therefore, to deal with such stress, it would be better if they were intrinsically motivated, perceiving themselves as

competent, less concerned with others evaluation of their performances, absorbed in the task and enjoying themselves. In possessing such a healthy "mental approach" to competitive swimming, the athlete will be more capable of maintaining interest, psychological and physiological "freshness", and be able to cope with the inevitable stress that accompanies performing at elite levels (Watson, 1984).

Researchers (Gould, Feltz, Horn, and Weiss, 1982; Burton and Martens, 1986) addressing the issue of participation motives and "drop-out" from competitive sport, probably inadvertently, give the impression that this phenomenon is really only a problem with non-elite level, hence low achieving athletes. However, a survey of the broader related research (Roberts, 1984), suggests that high achievement level performers are as susceptible to "drop-out", at least in the long-run, as their lower ranked co-athletes.

In conclusion, the findings of this study support the contention that to become a better competitive swim performer, and in order to maintain this improvement and enjoy it, coaches, teachers, and others, should promote intrinsic motivation in their athletes. Specifically, the careful use of goal setting, providing positive feedback to swimmers about performance, and allowing the athlete some meaningful input into the organization of their training program, will enhance intrinsic motivation (Carron, 1984). In more general terms, coaches and teachers in organized youth sport must ensure that nothing interferes excessively

with the play ethic and inherent joy of physical activity (Fox and Biddle, 1988). Research (Wankel and Kreisel, 1985) suggests that young athletes already possess these intrinsic motivation "attitudes" when they enter competitive sport, therefore, given that extrinsic motivation in certain circumstances serves to undermine intrinsic motivation, the coach and teacher may well need to reduce their use of controlling extrinsic rewards.

The coach can also enhance intrinsic motivation in his athletes by encouraging them to become more task-involved and less ego-involved. Fox and Biddle (1988) state that the coach or teacher can strengthen intrinsically motivated feelings of mastery and competence by careful use of performance feedback, providing sound instructional advice, and helping athletes develop actual competency by using, "self-improvement as their yardstick" (p. 82).

Researchers (Duda, 1987; Fox and Biddle, 1988) have investigated the developmental differences that occur in motivational orientation from early childhood, through to adult stages. Although in this study only one difference was revealed between three age groups in terms of intrinsic motivation measures, it has been suggested that the salience of extrinsic motivation changes as athletes get older. It could be, that there is a developmentally functional level of extrinsic motivation - some extrinsic rewards may be more effective and appropriate to specific age groups. Possibly, the use in this study of only one global measure of extrinsic

motivation (ie: control causality orientation) represents a missed opportunity to investigate more fully the interaction between intrinsic motivation and extrinsic motivation.

In conclusion, the findings of this study offered support for the idea that high achievement level competitive swimmers are more intrinsically motivated than swimmers of lower achievement level.

REFERENCES

Alderman, R.B. and Wood, N.L. (1976). An analysis of incentive motivation in young Canadian athletes. Canadian Journal of Applied Sports Sciences, 1, 169-176.

Burton, D. and Martens, R. (1986). Pinned by their own goals: An exploratory investigation into why kids drop out of wrestling. Journal of Sport Psychology, 8, 183-197.

Carron, A.V. (1984). Motivation: Implications for coaching and teaching. London, Ontario: Sports Dynamics.

Chelladurai, P. (1984). Leadership in Sports. In J. Silva. and R.S. Weinberg (Eds.), Psychological foundations of sport. Champaign Ill: Human Kinetics.

Coffer, C.N. (1972). Motivation and emotion. Pennsylvania State University, Illinois: Scot, Forseman and Co..

Csikszentmihalyi, M. (1975). Beyond boredom and anxiety. San Francisco: Jossey - Bass.

Csikszentmihalyi, M. and Getzels, J.W. (1973). The personality of young artists: An empirical and theoretical exploration. British Journal of Psychology, Vol. 64, No.1, 91-104.

DeCharms, R. (1968). Personal causation: The internal affective determinants of behaviour. New York: Academic Press.

Deci, E.L. (1971). Effects of externally mediated rewards on intrinsic motivation. Journal of Personality and Social Psychology, 18, 105-115.

Deci, E.L. (1975). Intrinsic motivation. New York: Plenum Press.

Deci, E.L., Betley, G., Kahle, J., Abrams, L. and Porac, J. (1981). When trying to win: Competition and intrinsic motivation Personality and Social Psychology Bulletin, 7, 79-83.

Deci, E.L. and Ryan, R.M. (1985a). Intrinsic motivation and self-determination in human behaviour. New York: Plenum Press.

Deci, E.L. and Ryan, R.M. (1985b). The general causality orientations scale: Self-determination in personality. Journal of Research in Personality, 19, 109-134.

Dollard, J. and Miller, N.E. (1950). Personality and psychotherapy. New York: McGraw-Hill.

Duda, J.L. (1987). Toward a Developmental Theory of Children's Motivation in Sport. Journal of Sport Psychology, 9, 130-145.

Fox, K. and Biddle, S. (1988). Children's participation motives. British Journal of Physical Education, Vol. 19, No. 2, 79-82.

Freud, S. (1962). The ego and the id. New York: Norton.

Gallwey, W.T. (1974). The inner game of tennis. New York: Random House.

Garvie, G.T. (1979). Focus of motivation: A principle factor in sport participation. Unpublished doctoral dissertation, Edmonton, Alberta.

Gill, D.L., Gross, J.B. and Huddleston, S. (1983). Participation motivation in youth sports. International Journal of Sports Psychology, 14, 1-14.

Giorgi, A. (1970). Psychology as a human science. New York: Harper and Row.

Gould, D., Feltz, D., Horn, T. and Weiss, M. (1982). Reasons for discontinuing involvement in competitive youth swimming. Journal of Sport Behaviour, 5, 155-165.

Gould, D., Feltz, D.L., Weiss, M. and Petlichkoff, L. (1982). Participation motives in competitive youth swimmers. In T. Orlick, J.T. Partington. and J.H. Salmela (Eds.), Mental training for coaches and athletes. Ottawa: Coaching Association of Canada.

Gould, D. and Horn, T. (1984). Participation motivation in youth athletes. In J. Silva. and R.S. Weinberg (Eds.), Psychological foundations of sport. Champaign, Ill.: Human Kinetics.

Halliwell, W. (1978). Intrinsic motivation in sport. In W.F. Straub (Ed.), Sports Psychology: An analysis of athlete behaviour. Ithaca, New York: Mouvment Pubs.

Harter, S. (1979). Perceived competence scale for children. Unpublished manuscript, University of Denver.

Harter, S. (1981). A new self - report scale of intrinsic versus extrinsic orientation in the classroom: Motivational and informational components, Developmental Psychology, 17, 300-312.

Harter, S. (1982). The perceived competence scale for children. Child Development, 53, 87-97.

Haworth, J.T. and Smith, M.A. (1975). Work and leisure. London: Lepus Books.

Hogg, J.M. (1982). The relationship of self-esteem and other variables among competitive swimmers of differing age and ability. Unpublished doctoral dissertation, University of Alberta.

Hull, C.L. (1943). Principles of behaviour: An introduction to behaviour theory. New York: Appleton - Century - Crafts.

Inagaki, K. (1980). Effects of external reinforcement on intrinsic motivation. Japanese Psychological Review, Vol. 23, No. 1, 121-132.

Janis, I.L. and Field, P.B. (1959). The Janis and Field personality questionnaire. In C.I. Hovland and I.L. Janis (Eds.), Personality and Persuasibility. New Haren, Conn.: Yale University Press.

Klint, K.A. and Weiss, M.R. (1987). Perceived Competence and motives for participating in Youth Sports: A Test of Harter's Competence Motivation Theory. Journal of Sports Psychology, 9, 55-65.

Koestner, R., Ryan, R.M., Bernieri, F., and Holt, K. (1984). Setting limits on children's behaviour: The differential effects of controlling versus informational styles on intrinsic motivation and creativity. Journal of Personality, 52, 233-248.

Kruglanski, A.W., Friedman, I., and Zeevi, G. (1971). The effects of extrinsic incentive on some qualitative aspects of task performance. Journal of Personality, 39, 606-617.

Lepper, M.R., and Greene, D. (1975). Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. Journal of Personality and Social Psychology, 31, 479-486.

Maehr, M.L. and Nicholls, J.G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.), Studies in cross - cultural psychology. New York: Academic Press.

Martens, R. and Simon, J.A. (1976). Comparison of three predictors of state anxiety in competitive situations. Research quarterly, 47, 381-387.

Martens, R. (1977).The sport competition anxiety test. Champaign, Ill.: Human Kinetics.

Martens, R., Burton, D., Vealey, R.S., Bump, L.A. and Smith, D.E. (1983). Competitive state anxiety inventory - 2. Unpublished manuscript, University of Illinois.

McAuley, E., Duncan, T.E. and Tammen, V.V. (1983). The intrinsic motivation inventory in an experimental sports setting: A confirmatory factor analysis. Unpublished manuscript, University of Oregon.

Neulinger, J. (1974).The psychology of leisure: Research approaches to the study of leisure. University of New York: C.C. Thomas Publishing.

Nicholls, J.G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. Psychological Review, 91, 328-346.

Orlick, T.D., and Mosher, R. (1978). Extrinsic awards and participant motivation in a sport related task.International Journal of Sports Psychology, 9, 27-39.

Passer, M.W. (1982). Psychological stress in youth sports. In R.A. Magill., M.J. Ash. and F.L. Smoll (Eds.),Children in Sport: A contemporary anthology(2nd ed.). Champaign, Ill: Human Kinetics.

Polanyi, M. (1958).Personal knowledge. Chicago: University of Chicago Press.

Roberts, G.C. (1984). Toward a new theory of motivation in sport: The role of perceived ability. In J. Silva. and R.S. Weinberg (Eds.),Psychological foundations of sport. Champaign Ill: Human Kinetics.

Roberts, G.C. (1986). The growing child and the perception of competitive stress in sport. In G. Gleeson (Ed.),The growing child in competitive sport. British Association of National Coaches: Hodder and Stoughton Pubs.

Rosenberg, M. (1965).The adolescent and self image. Princeton, New Jersey: Princeton University Press.

Rosenberg, M. (1979). Conceiving the self. New York: Basic Books.

Ross, M. (1975). Salience of reward and intrinsic motivation.Journal of Personality and Social Psychology, 32, 245-254.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, 1.

Ryan, R. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. Journal of Personality and Social Psychology, Vol. 43, No. 3, 450-461.

Ryan, R. and Grolnick, W.S. (1984). Origins and pawns in the classroom: Self-report and projective assessments of individual differences in children's perceptions. Unpublished manuscript, University of Rochester.

Ryan, E.D. (1979). Attribution, intrinsic motivation and athletics: A replication and extension. In C.H. Nadeau. et al., Psychology of motor behaviour and sport. Champaign Ill., Human Kinetics.

Scanlan, T.K. and Lewthwaite, R. (1984). Social psychological aspects of competition for male youth sport participants: I. Predictors of competitive stress. Journal of Sports Psychology, 6, 208-226.

Scanlan, T.K. and Lewthwaite, R. (1986). Social psychological aspects of competition for male youth sport participants: IV. Predictors of enjoyment. Journal of Sports Psychology, 8, 25-35.

Singer, R.N. and Gerson, R. (1980). Athletic competition for children: Motivational considerations. International Journal of Sport Psychology, 11, 249-262.

Singer, R.N. (1972). Coaching, athletics and psychology. Florida State University: McGraw - Hill Book Co..

Spielberger, C.D. (Ed.) (1966). Anxiety and behaviour. New York: Academic Press.

Strauss, J. and Ryan, R.M. (1987). Autonomy disturbances in subtypes of Anorexia Nervosa. Journal of Abnormal Psychology, Vol. 96, No. 3, 254-258.

Vallerand, R.J. and Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory. Journal of Sports Psychology, 6, 94-102.

Wankel, L. and Kreisel, P. (1982). Factors underlying enjoyment and lack of enjoyment in minor sport: Sport and age group comparisons. In L. Wankel and R.B. Wilberg (Eds.) Canadian Society for Psychomotor Learning and Sports Psychology. Edmonton: University of Alberta.

Wankel, L.M. and Kreisel, P.S.J. (1985). Factors underlying enjoyment of Sports: Sport and age group comparisons. Journal of Sport Psychology, 7, 51-64.

Watson, G.G. (1984). Competition and intrinsic motivation in children's sport and games: A conceptual analysis. International Journal of Sports Psychology, 15, 205-218.

Weinberg, R.S. and Ragan, J. (1979). Effects of competition, success / failure, and sex on intrinsic motivation. Research Quarterley, 50, 503-510.

Weiss, M.R., Bredemeir, B.J. and Shewchuk, R.M. (1985). An intrinsic / extrinsic motivation scale for the youth sport setting: A confirmatory factor analysis. Journal of Sports Psychology, 7, 75-91.

White, R.W. (1959). Motivation reconsidered: The concept of competence. Psychological Review, 66, 297-333.

Whitehead, J. (1984). Motives for higher education: A study of intrinsic and extrinsic motivation in relation to academic attainment. Cambridge Journal of Education, Vol. 14, No. 2, 26-34.

APPENDICES

Appendix 1

JMH/SNC/PSY.1988.
UNIVERSITY OF ALBERTA

CANADIAN AMATEUR SWIMMING ASSOCIATION
SCN FORM A

The following questionnaires are intended to help us appreciate how you feel about yourself in general and as a competitive swimmer, and eventually to help us improve our coaching methods.

There are no right or wrong answers. Try to be as accurate as possible, but work quickly because first impressions are important.

Carefully read the instructions that appear before each questionnaire and answer all questions.

Also provided is a RESPONSE SHEET. Please match up the RESPONSE SHEET to the Questionnaire Booklet and blacken out your responses to each statement from the questionnaire on the RESPONSE SHEET. If you change your mind about a response, be sure to carefully erase that response before blackening out a revised response. There should only be one response for each statement. All statements must be responded to.

Use an HB pencil.

Please do not mark the QUESTIONNAIRE BOOKLET - only the RESPONSE SHEET.

Before you start with the questionnaire booklet overleaf, please fill in the requested personal details at the beginning of the RESPONSE SHEET.

JMH '88

QUESTIONNAIRE 1.

Please blacken out strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD) on the response sheet provided to indicate how you feel about yourself as a person. It is important that you answer each question as accurately as you can. Do not spend too much time in deciding your estimation.

Q1. I feel that I am a person of worth, at least on an equal plane with others.

Q2. All in all, I am inclined to feel that I am a failure.

Q3. I feel that I have a number of good qualities.

Q4. I am able to do things as well as most other people.

Q5. I feel I do not have much to be proud of.

Q6. I take a positive attitude toward myself.

Q7. On the whole, I am satisfied with myself.

Q8. I wish I could have more respect for myself.

Q9. I certainly feel useless at times.

Q10. At times I think I am no good at all.

(Rosenberg,1965)

QUESTIONNAIRE 2

We want to know how you feel about competitive swimming. Below are a few statements about how persons feel when they compete in sports and games. Read each statement carefully and decide if you Hardly Ever (HE), Sometimes (S), or Often (O) feel this way when you compete in swimming. Depending on your feelings, blacken the circle on the response sheet that best describes your feelings about each statement. There are no right or wrong answers. Do not spend too much time on any one statement. Remember choose the word that best describes how you usually feel when competing in swimming.

Q1. Competing against others is fun.

Q2. Before I compete I feel uneasy.

Q3. Before I compete I worry about performing well.

Q4. I am a good sportsman when I compete.

Q5. When I compete I worry about making mistakes.

Q6. Before I compete I am calm.

Q7. Setting a goal is important when competing.

Q8. Before I compete I get a funny feeling in my stomach.

Q9. Just before competing I notice my heart beats faster than usual.

Q10. I like rough games.

Q11. Before I compete I feel relaxed.

Q12. Before I compete I am nervous.

Q13. Team sports are more exciting than individual sports.

Q14. I get nervous waiting to start my race.

Q15. Before I compete I usually get up-tight.

(Martens,1977)

QUESTIONNAIRES 3 AND 4

The purpose of the next two questionnaires is to assess the feelings you have about yourself by having you judge yourself against a series of descriptive scales. In #3 and #4 you will find two different scales or things to be judged and on the response sheet a set of scales numbered

(1) (2) (3) (4) (5) (6) (7)

If you feel that the concept is very closely related to one end of the scale or the other then you would blacken out either the (1) or the (7) on the response sheet. If you feel that it is only slightly related then you would blacken out (2) or (3) or (5) or (6) on the response sheet - depending on the strength of your feelings. If you felt the concept to be neutral (both sides of the scale equally associated with the concept) OR if the scale is completely irrelevant or unrelated then you would blacken out (4) on the response sheet.

Remember only one number should be blackened out on each scale and be sure to blacken out a number for each scale.

QUESTIONNAIRE 3

Generally speaking when I think of myself as a person I feel that I am:

Q1.	quick	(1)	(2)	(3)	(4)	(5)	(6)	(7)	slow
Q2.	beautiful	(1)	(2)	(3)	(4)	(5)	(6)	(7)	ugly
Q3.	weak	(1)	(2)	(3)	(4)	(5)	(6)	(7)	strong
Q4.	worthless	(1)	(2)	(3)	(4)	(5)	(6)	(7)	valuable
Q5.	active	(1)	(2)	(3)	(4)	(5)	(6)	(7)	passive
Q6.	small	(1)	(2)	(3)	(4)	(5)	(6)	(7)	large
Q7.	bad	(1)	(2)	(3)	(4)	(5)	(6)	(7)	good
Q8.	brave	(1)	(2)	(3)	(4)	(5)	(6)	(7)	cowardly
Q9.	tense	(1)	(2)	(3)	(4)	(5)	(6)	(7)	relaxed

QUESTIONNAIRE 4

Generally speaking when I think about myself as a competitive swimmer I feel that I am:

Q1.	quick	(1)	(2)	(3)	(4)	(5)	(6)	(7)	slow
Q2.	beautiful	(1)	(2)	(3)	(4)	(5)	(6)	(7)	ugly
Q3.	weak	(1)	(2)	(3)	(4)	(5)	(6)	(7)	strong
Q4.	worthless	(1)	(2)	(3)	(4)	(5)	(6)	(7)	valuable
Q5.	active	(1)	(2)	(3)	(4)	(5)	(6)	(7)	passive
Q6.	small	(1)	(2)	(3)	(4)	(5)	(6)	(7)	large
Q7.	bad	(1)	(2)	(3)	(4)	(5)	(6)	(7)	good
Q8.	brave	(1)	(2)	(3)	(4)	(5)	(6)	(7)	cowardly
Q9.	tense	(1)	(2)	(3)	(4)	(5)	(6)	(7)	relaxed

(Hogg,1982)

QUESTIONNAIRE 5

Please blacken out strongly agree (SA), agree (A), disagree (D) or strongly disagree (SD) on the response sheet to indicate how you feel about yourself as a competitive swimmer. It is important that you answer each question as accurately as you can. Do not spend too much time deciding your estimation.

Q1. I feel that I am a competitive swimmer of worth and as skillful as other swimmers.

Q2. In swimming terms I am inclined to think that I am a failure.

Q3. I feel that I possess some good qualities that help my swimming performance.

Q4. I can swim just as well as most other competitors in my age category.

Q5. My swimming performances do not leave me much to be proud of.

Q6. I take a positive attitude toward myself as a competitive swimmer.

Q7. On the whole I am satisfied with my success in competitive swimming.

Q8. I wish I could have more respect for myself as a competitive swimmer.

Q9. I certainly feel that my swimming performances are useless sometimes.

Q10. At times I think I am no good at all as a swimmer.

(Hogg,1982)

QUESTIONNAIRE 6

For each of the following statements please select the number that best indicates how strongly you agree or disagree with the sentence using the following scale as a guide.

1	2	3	4	5	6	7
strongly disagree	disagree	somewhat disagree	neutral	somewhat agree	agree	strongly agree

Blacken out the response that you have selected on the response sheet.

Remember only one number should be blackened out on each scale and be sure to blacken out a number for each scale.

Q1. I enjoy swimming competitively very much.

Q2. I think I am pretty good at swimming.

Q3. I put a lot of effort into competitive swimming.

Q4. It is important for me to do well in competitive swimming.

Q5. I often feel tense while performing in swimming competitions.

Q6. I try very hard during swimming competitions.

Q7. Taking part in swimming competitions is fun.

Q8. I would describe swimming competitions as very interesting to take part in.

Q9. I feel under pressure when I swim.

Q10. I feel anxious during swimming competitions.

Q11. I don't try very hard in swimming meets.

Q12. After swimming in several swim meets, I feel pretty competent or capable.

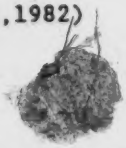
Q13. Usually I am very relaxed when I swim competitively.

Q14. I am pretty skilled at swimming.

Q15. Swimming competitively does not interest me.

Q16. Usually I don't perform very well in swimming competitions.

(Ryan,1982)



QUESTIONNAIRE 7A - For swimmers 13 years AND UNDER

We would like to know how you feel about yourself as a competitive swimmer in a variety of different situations. There are no right or wrong answers. The only right answer is the one you feel to be true for you.

We provide an example for you to consider:

Really True For Me	Sort Of True For Me			Other kids would rather watch TV	Sort Of True For Me	Really True For Me
		Some kids would rather play outdoors in their spare time	BUT			
A	B				C	D

Joe blackened out (B) on his response sheet. This means that he feels that the first statement in the question is best for him. But he doesn't feel that the "really true" response (box (A)) is the correct response for him because it isn't always the case for him.

Please read both statements in each question. Then decide which statement is most true for you. Next put your answer into the proper box on the response sheet. Don't take too long on each question - usually the answer that comes into your head first is the correct one for you.

Remember for each question blacken out one box (A, B, C, or D) on the response sheet.

Q1.	Some swimmers wish that they could perform better at their swimming.	BUT	Other swimmers feel that they are good enough.
Q2.	Some swimmers feel that they swim all the strokes and events equally well.	BUT	Other swimmers do not feel that they swim all the strokes and events equally well.
Q3.	Some swimmers do not perform well at important meets.	BUT	Other swimmers always do well when it really counts.
Q4.	Some swimmers feel that they are stronger than others their age.	BUT	Other swimmers feel that they are weaker.
Q5.	Some swimmers are more likely to quit when they feel that their workouts are too hard.	BUT	Other swimmers tend to keep going when it is tough.
Q6.	Some swimmers perform better practice than in the actual competition.	BUT	Other swimmers perform best in the actual race.
Q7.	Some swimmers find it quite easy to make any stroke changes the coach suggests.	BUT	Other swimmers need more time to make these changes correctly.

(Adaptation of Harter,1978)

QUESTIONNAIRE 7B - For swimmers 14 years AND OVER

We would like to know how you feel about yourself as a competitive swimmer in a variety of different situations. There are no right or wrong answers. The only right answer is the one you feel to be true for you.

We provide an example for you to consider:

Really True For Me	Sort Of True For Me			Sort Of True For Me	Really True For Me
		Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch TV	
A	B			C	D

Joe blackened out (B) on his response sheet. This means that he feels that the first statement in the question is best for him. But he doesn't feel that the "really true" response (box (A)) is the correct response for him because it isn't always the case for him.

Please read both statements in each question. Then decide which statement is most true for you. Next put your answer into the proper box on the response sheet. Don't take too long on each question - usually the answer that comes into your head first is the correct one for you.

Remember for each question blacken out one box (A, B, C, or D) on the response sheet.

Q1.	Some swimmers wish that they could perform better at swimming.	BUT	Others feel that they are good enough.
Q2.	Some swimmers feel physically competent at all the strokes and events that they compete in	BUT	Other swimmers do not feel physically competent at all the strokes and events they compete in
Q3.	Some swimmers do not perform well at important swim meets.	BUT	Others always do when it really counts.
Q4.	Some swimmers feel that they are physically stronger than others their own age.	BUT	Others feel physically weaker than those swimmers within their own age group.
Q5.	Some swimmers are more likely to quit when the workouts are too physically demanding.	BUT	Others tend to persevere when workouts are tough.
Q6.	Some swimmers perform better in practice than in actual competitions.	BUT	Others exceed their practice performance when it comes to the actual race.
Q7.	Some swimmers are able to adjust to any new stroke modification or improvement that the coach might suggest.	BUT	Others take a considerable time before the corrections or suggestions really sink in.

(Adaptation of Harter,1978)

QUESTIONNAIRE 8

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered (A) or (B). Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you are concerned.

In some instances, you may discover that you believe both or neither of the statements. In such cases, be sure to select the one you more strongly believe to be the case as far as you are concerned.

Please answer all these items carefully but do not spend too much time on any one item. This is a measure of personal belief; obviously there are no right and wrong answers.

Remeber to select the alternative which you personally believe to be more true. Please blacken out the appropriate circle on the response sheet.

I more strongly believe that:

Q1. A - Children get into trouble because their parents punish them too much.
B - The trouble with most children nowadays is that their parents are too easy with them.

Q2. A - Many of the unhappy things in people's lives are partly due to bad luck.
B - People's misfortunes result from the mistakes they make.

Q3. A - One of the major reasons why we have wars is because people don't take enough interest in politics.
B - There will always be wars no matter how hard people try to prevent them.

Q4. A - In the long run people get the respect they deserve in this world.
B - Unfortunately an individual's worth often passes unrecognized no matter how hard he tries.

Q5. A - The idea that teachers are unfair to students is nonsense.
B - Most students don't realize the extent to which their grades are influenced by accidental happenings.

Q6. A - Without the right breaks one cannot be an effective leader.
B - Capable people who fail to become leaders have not taken advantage of their opportunities.

Q7. A - No matter how hard you try some people just don't like you.
B - People who can't get others to like them don't understand how to get along with others.

Q8. A - Heredity plays a major role in determining one's personality.
B - It is one's experiences in life that determine what they're like.

Q9. A - I have often found that what is going to happen will happen.
B - Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

Q10. A - In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
B - Many times exam questions tend to be so unrelated to course work that studying is really useless.

Q11. A - Becoming a success is a matter of hard work; luck has little or nothing to do with it.
B - Getting a good job depends mainly on being in the right place at the right time.

Q12. A - The average citizen can have an influence on government decisions.
B - This world is run by the few people in power, and there is not much the little guy can do about it.

Q13. A - When I make plans, I am most certain I can make them work.
B - It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

Q14. A - There are certain people who are just no good.
B - There is some good in everybody.

Q15. A - In my case getting what I want has little or nothing to do with luck.
B - Many times we might just as well decide what to do by tossing a coin.

Q16. A - Who gets to be the boss depends on who was lucky enough to be in the right place first.
B - Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.

Q17. A - As far as world affairs are concerned, most of us are the victims of forces we can neither understand nor control.
B - By taking an active part in political and social affairs the people can control world events.

Q18. A - Most people can't realize the extent to which their lives are controlled by accidental happenings.
B - There really is no such thing as "luck".

Q19. A - One should always be willing to admit ones mistakes.
B - It is usually best to cover up ones mistakes.

Q20. A - It is hard to know whether or not a person really likes you.
B - How many friends you have depends on how nice of a person you are.

Q21. A - In the long run the bad things that happen to us are balanced by the good ones.
B - Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

Q22. A - With enough effort we can wipe out political corruption.
B - It is difficult for people to have much control over the things politicians do in office.

Q23. A - Sometimes I can't understand how teachers arrive at the grades they give.
B - There is a direct connection between how hard I study and the grades I get.

Q24. A - A good leader expects people to decide for themselves what they should do.
B - A good leader makes it clear to everybody what their jobs are.

Q25. A - Many times I feel that I have little influence over the things that happen to me.
B - It is impossible for me to believe that chance or luck plays an important role in my life.

Q26. A - People are lonely because they don't try to be friendly.
B - There's not much use in trying too hard to please people: if they like you, they like you.

Q27. A - There is too much empasis in athletics in school.
B - Team sports are an excellent way to build character.

Q28. A - What happens to me is my own doing.
B - Sometimes I feel that I don't have enough control over the direction my life is taking.

Q29. A - Most of the time I can't understand why politicians behave the way they do.
B - In the long run the people are responsible for bad government on a national as well as on a local level.

(Rotter,1966)

QUESTIONNAIRE 9

On the following pages you will find descriptions of different situations. Please read each description and then consider the responses in turn. You should select one number for each of the three responses a, b, and c to the situation described.

Consider this example:

Subject: R. Reaganochev

Situation: You are discussing politics with a friend and find yourself in sharp disagreement. It is likely you would

a) Press forward with your viewpoint and try to get him/her to understand it

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

b) Change the topic since you would feel unable to make your point understood

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

c) Try to understand your friend's position to figure out why you disagree

1	2	3	4	5	6	7
very unlikely			moderately likely			very likely

In the example, our subject R. Reaganochev feels that he would likely press forward with his viewpoint and blackened (6) on the response sheet for his response a), be very unlikely to change the topic and blackened (1) on the response sheet for his response b), and be moderately likely to try to understand his friend's position and blackened (4) on the response sheet for his response c).

Remember that there is no right or wrong answer. Just respond to each item according to how you would feel in each situation.

Please blacken out the corresponding numbers in the response sheet.

Situation 1: You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is

a) What if I can't live up to the new responsibility?
b) Will I make more at this position?
c) I wonder if the new work will be imteresting.

Situation 2: You have a school aged daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to

a) Talk it over with your daughter to understand further what the problem is.
b) Scold her and hope she does better.
c) Make sure she does the assignments because she should be working harder.

Situation 3: You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think

a) It's not what you know but who you know.
b) I'm probably not good enough for the job.
c) Somehow they didn't see my qualifications as matching their needs.

Situation 4: You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who can not all break at once. You would likely handle this by

a) Telling the three workers the situation and having them work with you on the schedule
b) Simply assign the times that each can break to avoid any problems.
c) Find out from someone in authority what to do or what was done in the past.

Situation 5: A close friend of yours has been moody lately and a couple of times has become very angry with you over 'nothing'. You may

a) Share your observations with him and try to find out what is going on for him.
b) Ignore it because there's not much you can do about it anyway.
c) Tell him that you are willing to spend time together if and only if he makes more effort to control himself.

Situation 6: You have just received the results of a test you took and you discovered that you did poorly. Your initial reaction is

a) "I can't do anything right", and feel sad.
b) "I wonder how I did so poorly", and feel disappointed.
c) "That stupid test doesn't show anything", and feel angry.

Situation 7: You have been invited to a large party where you know very few people. As you look forward to the evening, you would likely expect that

a) You'll try to fit in with whatever is happening in order to have a good time and not look bad.
b) You'll find some people with whom you can relate.
c) You'll feel somewhat isolated and unnoticed.

Situation 8: You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as

a) Take charge: that is you would make most major decisions yourself.
b) Follow precedent: you're not really up to the task so you'd do it the way it has been done before.
c) Seek participation: get inputs from others before you make the final plans.

Situation 9: Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you are likely to think

a) You didn't really expect the job; you frequently get passed over.
b) The other person probably did the right things politically to get the job.
c) You would probably take a look at factors in your own performance that lead you to be passed over.

Situation 10: You are embarking on a new career. The most important consideration is likely to be

a) Whether you can do the work without getting in over your head.
b) How interested you are in that kind of work.
c) Whether there are good possibilities for advancement.

Situation 11: A woman who works for you has generally done an adequate job. However, for the past two weeks, her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be

a) Tell her that her work is below what is expected and that she should start working harder.
b) Ask her about the problem and let her know that you are available to help work it out.
c) It is hard to know what to do to get her straightened out.

Situation 12: Your company has promoted you to a position in a city far from you present location. As you think about the move you would probably

a) Feel interested in the new challenge and a little nervous at the same time.
b) Feel excited about the higher salary and status that is involved
c) Feel stressed and anxious about the upcoming changes.

(Deci & Ryan,1985)

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Appendix 2

RESPONSE SHEET

Name _____ Club _____

Sex (M=Male, F=Female) (M) (F)

Age: 13 Years and under
14 Years
15 Years
16 Years
17 Years
18 Years and over

Event Classification: Do you regard yourself as
(1) Sprinter
(2) Middle Distance Swimmer
(3) Distance Swimmer

Best Event _____
Best Time _____ SC _____ LC

Ability/Ranking: (Only mark one response)
Are you currently ranked in the top 25 in your age group/best event? (Y)
Are you currently ranked in the top 50 in your age group/best event? (Y)
Are you currently unranked? (Y)

Please respond to every question but only one response to each question. Please use HB pencil

Question 1

1.	SA	A	D	SD
2.	SA	A	D	SD
3.	SA	A	D	SD
4.	SA	A	D	SD
5.	SA	A	D	SD
6.	SA	A	D	SD
7.	SA	A	D	SD
8.	SA	A	D	SD
9.	SA	A	D	SD
10.	SA	A	D	SD

Question 2

1.	HE	S	O
2.	HE	S	O
3.	HE	S	O
4.	HE	S	O
5.	HE	S	O
6.	HE	S	O
7.	HE	S	O
8.	HE	S	O
9.	HE	S	O
10.	HE	S	O
11.	HE	S	O
12.	HE	S	O
13.	HE	S	O
14.	HE	S	O
15.	HE	S	O

Question 5

1.	SA	A	D	SD
2.	SA	A	D	SD
3.	SA	A	D	SD
4.	SA	A	D	SD
5.	SA	A	D	SD
6.	SA	A	D	SD
7.	SA	A	D	SD
8.	SA	A	D	SD
9.	SA	A	D	SD
10.	SA	A	D	SD

Question 3

1.	quick	1	2	3	4	5	6	7	slow
2.	beautiful	1	2	3	4	5	6	7	ugly
3.	weak	1	2	3	4	5	6	7	strong
4.	worthless	1	2	3	4	5	6	7	valuable
5.	active	1	2	3	4	5	6	7	passive
6.	small	1	2	3	4	5	6	7	large
7.	bad	1	2	3	4	5	6	7	good
8.	brave	1	2	3	4	5	6	7	cowardly
9.	tense	1	2	3	4	5	6	7	relaxed

Question 4

1.	quick	1	2	3	4	5	6	7	slow
2.	beautiful	1	2	3	4	5	6	7	ugly
3.	weak	1	2	3	4	5	6	7	strong
4.	worthless	1	2	3	4	5	6	7	valuable
5.	active	1	2	3	4	5	6	7	passive
6.	small	1	2	3	4	5	6	7	large
7.	bad	1	2	3	4	5	6	7	good
8.	brave	1	2	3	4	5	6	7	cowardly
9.	tense	1	2	3	4	5	6	7	relaxed

Question 6

1.	Strongly	1	2	3	4	5	6	7	Strongly
2.	Disagree	1	2	3	4	5	6	7	Agree
3.		1	2	3	4	5	6	7	
4.		1	2	3	4	5	6	7	
5.		1	2	3	4	5	6	7	
6.		1	2	3	4	5	6	7	
7.		1	2	3	4	5	6	7	
8.		1	2	3	4	5	5	7	
9.		1	2	3	4	5	6	7	
10.		1	2	3	4	5	6	7	
11.		1	2	3	4	5	6	7	
12.		1	2	3	4	5	6	7	
13.		1	2	3	4	5	6	7	
14.		1	2	3	4	5	6	7	
15.		1	2	3	4	5	6	7	
16.		1	2	3	4	5	6	7	

Question 8

1.	A	B
2.	A	B
3.	A	B
4.	A	B
5.	A	B
6.	A	B
7.	A	B
8.	A	B
9.	A	B
10.	A	B
11.	A	B
12.	A	B
13.	A	B
14.	A	B
15.	A	B
16.	A	B
17.	A	B
18.	A	B
19.	A	B
20.	A	B
21.	A	B
22.	A	B
23.	A	B
24.	A	B
25.	A	B
26.	A	B
27.	A	B
28.	A	B
29.	A	B

Question 7 A/B

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D
4.	A	B	C	D
5.	A	B	C	D
6.	A	B	C	D
7.	A	B	C	D

Question 9

1a.	Very	1	2	3	4	5	6	7	Very
1b.	Unlikely	1	2	3	4	5	6	7	Likely
1c.		1	2	3	4	5	6	7	
2a.		1	2	3	4	5	6	7	
2b.		1	2	3	4	5	6	7	
2c.		1	2	3	4	5	6	7	
3a.		1	2	3	4	5	6	7	
3b.		1	2	3	4	5	6	7	
3c.		1	2	3	4	5	6	7	
4a.		1	2	3	4	5	6	7	
4b.		1	2	3	4	5	6	7	
4c.		1	2	3	4	5	6	7	
5a.		1	2	3	4	5	6	7	
5b.		1	2	3	4	5	6	7	
5c.		1	2	3	4	5	6	7	
6a.		1	2	3	4	5	6	7	
6b.		1	2	3	4	5	6	7	
6c.		1	2	3	4	5	6	7	
7a.		1	2	3	4	5	6	7	
7b.		1	2	3	4	5	6	7	
7c.		1	2	3	4	5	6	7	
8a.		1	2	3	4	5	6	7	
8b.		1	2	3	4	5	6	7	
8c.		1	2	3	4	5	6	7	
9a.		1	2	3	4	5	6	7	
9b.		1	2	3	4	5	6	7	
9c.		1	2	3	4	5	6	7	
10a.		1	2	3	4	5	6	7	
10b.		1	2	3	4	5	6	7	
10c.		1	2	3	4	5	6	7	
11a.		1	2	3	4	5	6	7	
11b.		1	2	3	4	5	6	7	
11c.		1	2	3	4	5	6	7	
12a.		1	2	3	4	5	6	7	
12b.		1	2	3	4	5	6	7	
12c.		1	2	3	4	5	6	7	

JMH/SNC/1988

Appendix 3

INSTRUCTIONS AND INFORMATION FOR SUBJECTS

General points:

1. The questionnaire booklet contains 9 questionnaires - some may take as little as 3-4 minutes to complete, while others could take 15 minutes or more.
2. There is no time limit, although previous studies show that it would be usual to complete the booklet within 1 hour, and unusual to be done in less than half an hour.
3. Regarding the questions themselves, please remember the following:

    a. Read each question carefully.
    b. Try to be as honest as you can - remember there is no right or wrong answer - it's what YOU think that's important.

More Specifically; Don't forget that:

1. Before you start, make sure you read the first page of the booklet which gives you a bit more detail about what you need to do.
2. It's very important that you fill in the personal details section at the top of the Response Sheet.
3. Please pay particular attention to the question asking about your ranking - it refers to your NATIONAL ranking only.
4. Please try to remember that questionnaire 7a. is for swimmers 13 years and under; 7b. is for those who are 14 years old and over.
5. Questionnaire 8 involves forced choice answers - this means that, even though you don't really like either of the statements offered, you must select the one most preferable for you.
6. Finally, if you feel something is truly incomprehensible, whether it's a question or the instructions, don't be afraid to come and ask.

Appendix 4

Dept. of Physical Education and Sport Studies,
University of Alberta,
Edmonton. T6G 2H9.

Psychological Tests.

Dear Coach,

I am conducting research into the motivational aspects of competitive swimmers to determine if differences exist between individuals as a function of their sex, age, and most importantly, level of performance. This work forms part of a larger, on-going study supported by Swim Canada, into the relationship of selected psychological variables and competitive swimming. When the results from these measures have been analysed, appropriate feedback on individual swimmers and your team/club will be forwarded to you.

To assist you with the testing procedure itself, the following guidelines are offered.

- Swimmers attempting the questionnaires should be 12 years old and over.
- Testing should be conducted in a quiet environment, where the swimmers feel comfortable and can concentrate.
- To ensure consistency with the testing procedures throughout this research, groups of no more than 30 swimmers should be tested at any one time.
- The circles on the response sheet should be filled in, using a soft lead pencil.

I have a computer program set up to analyse the results - this is scheduled to run on the week commencing January 9th 1989. In view of this I would greatly appreciate the return of the completed response sheets and questionnaire booklets as soon as possible.

If all goes according to schedule, I should be able to provide you with some interesting, and I hope, helpful information, by mid February.

Many thanks for your help and co-operation.

Yours sincerely,

Mark Nesti.

Appendix 5 Descriptive Statistics For All Swimmers According to Gender and Ability.

Ability		Nationally Ranked 1-25		Nationally Ranked 26-50		Unranked	
Gender		Male	Female	Male	Female	Male	Female
SCAT.	X=	21.54	22.04	23.35	24.23	21.30	23.54
	SD=	3.33	3.31	3.65	3.69	4.18	4.42
	N=	28	23	20	22	58	68
S.Se.	X=	31.82	30.39	31.85	30.82	30.36	29.00
	SD=	4.29	4.65	4.68	5.08	4.27	5.15
IMI.	X=	84.00	86.00	87.00	85.77	84.79	82.32
	SD=	8.52	8.33	6.77	9.54	8.02	9.98
P.Comp.	X=	19.11	18.65	19.15	17.68	17.71	16.56
	SD=	2.38	2.96	2.37	3.11	2.90	3.19
Control.	X=	54.90	52.96	53.75	53.14	54.66	55.42
	SD=	5.83	4.95	8.21	5.80	7.48	7.09
Autonomy.	X=	69.18	68.04	66.80	66.91	67.05	67.82
	SD=	6.52	7.33	8.33	10.91	10.19	7.95

X= means SD= standard deviations (+-)

Appendix 6 I

Two Way Analysis of Variance For Specific Self-Esteem Scores of Male and Female Swimmers at Three Ability Levels.

Source of Variation.	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	70.87	3.18	0.076
Ability	2	62.84	2.82	0.062
2-Way Interaction	2	0.50	0.02	0.978
Error	213			
Total	218	22.68		

*Significant at 0.05 level

6II

Two Way Analysis of Variance for Intrinsic Motivation Scores of Male and Female Swimmers at Three Ability Levels.

Source of Variation	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	14.00	0.18	0.672
Ability	2	137.00	1.76	0.175
2-Way Interaction	2	89.50	1.15	0.319
Error	213	77.99		
Total	218	78.35		

*Significant at 0.05 level

Appendix 7 I

Two Way Analysis of Variance For Locus of Causality (Control) Scores of Male and Female swimmers at Three Ability Levels.

Source of Variation.	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	16.06	0.34	0.56
Ability	2	49.72	1.06	0.35
2-Way Interaction	2	34.09	0.73	0.48
Error	213	46.96		
Total	218	46.72		

*Significant at 0.05 level

7II

Two Way Analysis of Variance For Locus of Causality (Autonomy) Scores of Male and Female Swimmers at Three Ability Levels.

Source of Variation	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Main Effects				
Gender	1	0.56	0.01	0.932
Ability	2	38.97	0.51	0.602
2-Way Interaction	2	16.37	0.21	0.808
Error	213	76.53		
Total	218	75.29		

*Significant at 0.05 level

Appendix 8

One Way Analysis of Variance For All Swimmers in Three Age Groups

Dependent Variable: AUTONOMY

Source of Variation.	Degrees of Freedom	Mean Squares	F. Ratio	Prob.
Between Groups	2	677.71	9.72	.0001
Within Groups	216	69.74		
Total	218			

Group 1 = Swimmers Aged 13 & under (N=68)

Group 2 = Swimmers Aged 14 and 15 (N=66)

Group 3 = Swimmers Aged 16,17,18, and over (N=85)

Appendix 9 I A Comparison of Significant ($p<0.05$) Correlations ($r<0.4$) According to Ability and Gender.

Specific Self-Esteem (S.Se.)

Ability	Nationally Ranked 1-25		Nationally Ranked 26-50		Unranked	
Gender	Male	Female	Male	Female	Male	Female
S.Se. with IMI.	0.52	0.66	0.78	0.79	0.54	0.64
S.Se. with Comp.	0.59	-	-	-	0.52	0.71
S.Se. with Control.	-	0.40	-	-	-	-

9II A Comparison of Significant ($p<0.05$) Correlations ($r<0.4$) According to Ability and Gender.

Competitive Anxiety (SCAT).

Ability	Nationally Ranked 1-25		Nationally Ranked 26-50		Unranked	
Gender	Male	Female	Male	Female	Male	Female
SCAT with S.Se.	-	-	-0.43	-	-	-
SCAT with IMI	-	-	0.46	-	-0.61	-0.51
SCAT with Comp	-	-0.42	-	0.73	-	-

Appendix 10

A Comparison of Significant ($p<0.05$) Correlations ($r<0.4$) According to Ability and Gender.

Intrinsic Motivation (IMI.)

Ability	Nationally Ranked 1-25		Nationally Ranked 26-50		Unranked	
Gender	Male	Female	Male	Female	Male	Female
IMI with Competence.	0.55	0.41	0.54	0.38	0.48	0.58
IMI with Autonomy	0.47	-	-	-	-	-
Perceived Competence (P.Comp.)						
Competence with Autonomy	0.42	-	0.40	-	-	-